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INDIA RUBBER WORLD

William M. Morse,
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Volume 87

October 1, 1932

Number 1

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Published on the first of each month by Federated Business Publications, Inc., 420 Lexington Ave., New York, N. Y. Publishers of *Automotive Electricity*, *Fine Arts*, *INDIA RUBBER WORLD*, *Materials Handling & Distribution*, *Musio Trade Review*, *Novelty News*, *Premium and Specialty Advertising*, *Radio Digest*, *Radio Merchant*, *Rug Profits*, *Sales Management*, *Soda Fountain*, *Tires*; and operates in association with *Building Investment*, *Draperies*, and *Tire Rate Book*. Cable Address, ELBILL, New York. Subscription \$3.00 per year postpaid in the United States; \$4.10 per year postpaid to Canada; \$3.50 per year postpaid to all other countries.

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Vanderbilt News, Vol. 2, No. 4, July-August, 1932

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INDIA RUBBER WORLD

Published at 420 Lexington Avenue, 400 Graybar Building, New York, N. Y.

Volume 87

New York, October 1, 1932

Number 1

Slide Rule Calculation

Of Time-Temperature Relations in Vulcanization¹

J. H. Fielding²

TIME-TEMPERATURE calculations commonly encountered by rubber chemists can be divided into 2 major types, those involving constant temperatures or steps of constant temperatures and those involving varying temperatures.

The former of these types is met when dealing with thin articles or the surfaces of articles directly in contact with the heating medium. The calculation of time-temperature relations is relatively simple, consisting generally of reference to charts or tables of equivalent times at various temperatures or of relative curing rate at various temperatures. Frequently it is necessary to interpolate between values shown in the tables or to do some subsequent calculations after reading the relative curing rate values.

The latter type is met chiefly when dealing with the inside portions of thick articles which require some time to reach the temperature of the heating medium. It is also met when the temperature of the heating medium is raised along some

predetermined curve. Calculations of time-temperature relations of this type are more involved, and some form of rate-time integral must be resorted to. Several methods have been outlined and discussed by Sheppard and Wiegand³ and by Sherwood.⁴

It is the former type with which this article has to deal. Although calculations of this type are not difficult, they can be made considerably quicker and more convenient. Charts and tables may be dispensed with, and an ordinary slide rule substituted, on which calculations may be made with one setting.

Theoretical

A logarithmic relation between rate of vulcanization and temperature has long been recognized. This may be expressed in various ways, but a very convenient form is that of Equation (1).

$$\frac{1}{t_2} = \frac{1}{t_1} (K) \frac{T_2 - T_1}{10} \quad (1)$$

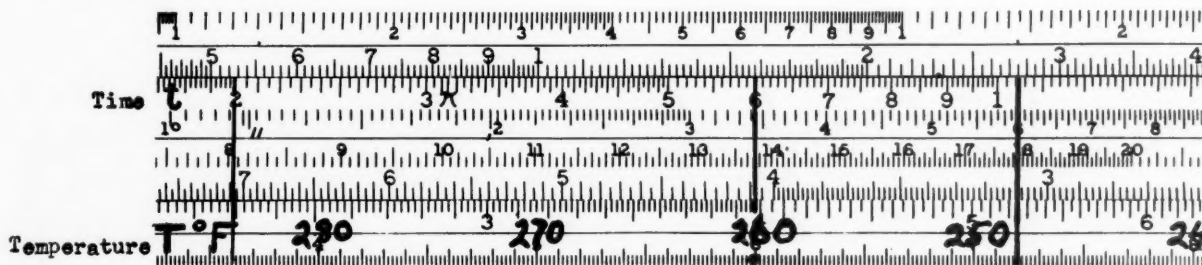


Fig. 1. A Polyphase Duplex Rule Using the "B" Scale for Time (t) and the "L" Scale for Temperature (T ° F.)

where, t_1 = curing time at temperature T_1
 t_2 = curing time at temperature T_2
 and K = temperature coefficient for 10°

Following the method of Lipka⁵ it can be shown that for solution by sliding scales this equation must take the form:

$$f(t) - F(T) = \text{constant}, \quad (2)$$

and that, provided this can be done, the equations for the 2 scales are:

$$x = m f(t) \quad (3)$$

$$\text{and } x = m F(T) \quad (4)$$

where x = distance along the scale from the origin
 and m = "scale modulus," a constant determining the size of the rule.

By a simple process Equation (1) may be put in the form of Equation (2) from which the scale equations are developed. For the time scale,

$$x = m \log t \quad (5)$$

For the temperature scale,

$$x = -m \frac{T}{10} \log K \quad (6)$$

This signifies that for the time scale a logarithmic scale must be used and that if a constant value of K with respect to temperature is assumed, a uniform scale is required for temperature, measured in the direction opposite to that of the time scale.

The constant m merely determines the length of the scales. Its significance can easily be shown if b is the length of the time scale from 1 to 10, 10 to 100, etc., from Equation (5).

$$m = \frac{b}{\log 10} \text{ or } m = b$$

Equation (6) then becomes by substitution,

$$x = -b \frac{T}{10} \log K \quad (7)$$

from which it is seen that the length of a 10° space is $b \log K$.

Time-temperature calculations, then, can be made on a slide rule consisting of 2 scales, a logarithmic time scale and a uniformly spaced temperature scale running in the opposite direction. The dimensions of the latter depend only upon the length of the time scale and the magnitude of the temperature coefficient.

Choice of a Temperature Coefficient

Most of the usual types of slide rules are already equipped with a uniformly spaced scale, the "L" scale, which, by a happy coincidence, can be used as a temperature scale in conjunction with the "square" scale provided that the temperature is expressed in degrees Fahrenheit and provided that each large division on the "L" scale is assigned a value of 10° F. The temperature coefficient which must be assumed to make this possible is well within the range of values reported in recent papers^{6,7}.

The required value of K may easily be visualized by noting that the length of a 10° space on the "L" scale is equal to 1.58 on the "square" scale. Sliding the rule by the length of 10° multiplies or divides by 1.58 which is the ratio of the rate of vulcanization at a given temperature to that at a temperature 10° lower.

Equation (7) may be used to arrive at the same conclu-

sion. Since b is the length of the time scale from 1 to 10, etc. (half the "square" scale), $2b$ is the length of the temperature scale and represents a range of 100° F. (the length of the "L" scale). Then by Equation (7),

$$2b = -b \frac{-100}{10} \log K$$

$$K = 1.58 \text{ for } 10^\circ \text{ F.}$$

In Centigrade units, the above value corresponds to 2.29 for 10° . Expressed otherwise, it corresponds to a doubling of the rate of cure in 15.1° F. or 8.4° C.

Without going into detail as to the most probable value of K or as to the effect of type of compound, temperature, or the method of determining degree of vulcanization, reference will be made merely to 2 publications which, in themselves, contain a large amount of experimental data and in which are discussed the results of previous writers. Sheppard⁶ working with a compound accelerated with litharge arrives at a value of 2.59 for 10° C. which corresponds to a doubling of the rate of vulcanization in 13.1° F.

Park and Maxwell⁷ report values for compounds accelerated with mercaptobenzothiazol and with crotonaldehyde aniline. They show an interesting difference between the temperature coefficients obtained with the 2 accelerators, and a further difference depending on whether chemical or physical means are used in determining degree of vulcanization. Their results are shown in Table I. These values correspond to a doubling of the rate of vulcanization in something between 13 and 19° F.

TABLE I

(Data of Park and Maxwell)
 Temperature coefficient for 10° C.

	Mercapto- benzothiazol	Crotonaldehyde Aniline
From physical data.....	1.91	2.32
From combined sulphur.....	2.30	2.67

Apparently the range from which a coefficient may be selected is quite broad. Its selection will depend to a large extent on the types of compounds to be dealt with. Having made a selection, it remains only to construct a scale according to Equation (7) or, if 1.58 for 10° F. is satisfactory, to assign the proper values to the "L" scale.

Construction of the Rule

Granted that this coefficient of 1.58 for 10° F. (2.29 for 10° C.) is satisfactory, the usual types of slide rules are immediately adaptable to time-temperature calculations.

Arrange the rule so that the "L" scale and a "square" scale are on the same side and so that one of them is fixed and the other sliding. The "square" scale then becomes the time scale. Assign temperature values to the "L" scale in such a way that the complete "L" scale covers a range of 100° F. and reads in a direction opposite to that of the time scale. Any convenient range of temperature, say 220° to 320° F., may be taken.

Figure 1 shows a Polyphase Duplex rule so arranged. The "B" scale is used as the time scale, and temperature values in degrees F. have been assigned to the "L" scale.

If it is necessary to use some coefficient other than 1.58 for 10° F. (2.20 for 10° C.), a new scale must be constructed for temperature. Its position and direction will depend upon the position and direction of the scale selected as a time scale. One of these scales must be fixed and the other sliding. One must read from left to right and the other right to left. The spacing of the temperature scale may be calculated from Equation (7). It may be determined roughly by noting that the length of the space on the time scale from unity to the value of the temperature coefficient is equal to the length of a 10° space on the temperature scale.

⁵Lipka "Graphical and Mechanical Computation," John Wiley & Sons, Inc., N. Y.

⁶Sheppard, INDIA RUBBER WORLD, 80, 2, 56 (1929).

⁷Park and Maxwell, Ind. Eng. Chem., 24, 148 (1932).

Use of the Rule

Having adjusted or constructed a rule as above, it is now possible to make time-temperature calculations with one setting. If a known time on the time scale is set opposite a known temperature on the temperature scale, equivalent times will be found along the time scale, each opposite its corresponding temperature on the temperature scale.

For example if a compound is being cured 60 minutes at 260° and a temperature of 248° or a time of 20 minutes is desired, set 60 minutes opposite 260° and read 104 minutes opposite 248° or read 284° opposite 20 minutes. This setting is illustrated in Figure 1.

It should be observed again that such a calculation does not allow for any temperature lag and is possible only when such a lag can be neglected. In other words it is possible

in all cases where reference to tables or charts of "equivalent cures" is satisfactory. It is not applicable to cases where a rate-time integral is ordinarily employed.

Conclusion

A quick and accurate method of making time-temperature calculations where no temperature lag is involved has been described. This method is directly adaptable to the usual types of slide rules in cases where a temperature coefficient of 1.58 for 10° F. (2.29 for 10° C.) can be used. Where some other coefficient is required, an additional scale is easily constructed.

The writer wishes to express his thanks to R. P. Dinsmore, chief chemist, The Goodyear Tire & Rubber Co., for permission to publish this paper.

Mold Overflow Problems

Cost of Waste Trimming an Important Manufacturing Item

WHEN a rubber man speaks of the overflow of rubber, a pressman thinks of the stock that exudes from the mold, and the production manager of the inevitable waste of rubber which is entailed. A little consideration will show the important part which trivial but valuable trimmings play in any rubber factory. The many wonderful vulcanized products are possible because rubber can be compounded into a suitable mixture which will flow. Rubber can be literally flowed into the finished shapes when suitably plasticated and milled with compounds, finally taking finished form through shaping in a mold.

Many rubber articles are made without waste, particularly wrapped goods, flooring, mats run through guides, and all classes of sponge rubber, but nearly all molded goods show some trimming waste to insure a perfect molding. Even where articles are carefully cut to shape to insure a smooth, well molded product, reliance on the flowing properties of the mix is necessary to fill a shape which is often an awkward one. In some cases to obtain special characteristics 2 qualities of rubber are used in an article, one being forcibly pressed into the other during the molding process to give a keying or locking effect which prevents subsequent separation of the 2 qualities.

A well-known form of automobile mat relies on the rubber flowing through small holes in the base plate to give anchoring projections on the opposite side. In tire molding the flow of tread rubber through suitably placed vent holes prevents air locks and permits clear cut design registration; similar remarks apply to many other types of molded articles. In some cases a mold parting line forms a convenient guide for fitting the article. In the manufacture of solid tires a flash line of variable thickness around the mold indicates lack of hydraulic pressure. If the uncured weight is correct, the mold flash trimmings show the state of cure.

It is possible, on the other hand, to allow too much rubber to escape from a mold by way of vent holes, for example in a tire mold, since it is much simpler to put vent holes at every possible point than to calculate carefully the required tread shape and quality of stock necessary to eliminate them. Vent holes should never be allowed except as a last resort since the trimming requires costly labor besides the waste of vulcanized rubber.

This question of trimming waste is of vital importance in all branches of the rubber industry, and a very large amount of money is spent annually for waste rubber, cost of trim-

ming, and machinery. In the footwear industry shoe soles and heels must be trimmed on suitable machines, and although cheap labor can be employed, the cost of the operation is appreciable in the manufacturing costs. This type of trimming cannot be avoided entirely, but in many cases, such as tires, it can be cut down considerably provided the stock is correctly designed and processed.

A minimum of trim which will allow successful production is obviously essential. Even a very slight increase in the percentage figure can add many tons of waste material during a year on a mass production article. Many factors must be taken into consideration in determining the correct amount of stock required to give a uniformly good article and keep trimming waste down to the desired minimum. Considerable time can usefully be devoted to elimination of such waste in all rubber factories.

In the first place the rubber must be supplied in a carefully processed form, and this requirement entails accurate laboratory checks, both before and after cure tests, for plasticity, modulus, and the like. Correct plasticity is necessary to give the required flow to the rubber which it is assumed is correctly designed for the purpose; if the gravity of the rubber composition varies appreciably, mold overflow will be heavy, or alternatively the mold will not be filled. Scorched rubber, which can also be detected during the laboratory checks, if at all pronounced, will cause pinching of the material during molding.

After the mixing has been passed by the laboratory, care must be taken in calendering it to the correct gage and in preventing scorching; similar care is necessary if the rubber is extruded. In turn the production shop must watch curing temperatures, hydraulic pressure, and, in the case of built-up forms, the shape of the uncured rubber introduced into the mold. The latter item is the cause of much bad molding work both in defective appearance and in defective behavior in service, such as laminations which might have been prevented by the use of a differently shaped piece of uncured rubber.

Finally the percentage scrap trimmings figure from any large output article should be recorded and checked carefully week by week so that any increase can be immediately investigated and corrected. The problem is a difficult one if the minimum amount of waste is to be approached consistently, but it is well worthy of serious effort and can show substantial savings.

Machine Feeds for

Automatic Mechanisms Facilitate Output and Promote Accuracy of

THE stock screw of a tubing machine functions to convey rubber composition from hopper to die through the cylinder of the tuber, and exerts upon the stock sufficient pressure to extrude it through the die steadily and with uniform cross section. Thus the output and its dimensions as delivered by the die, are influenced in large degree by feeding the machine with a constant and full supply of rubber compound.

The method ordinarily consists in entering short strips of warm stock successively at the hopper and forcing it by hand into contact with the flutes of the revolving stock screw. This method is satisfactory for small and medium machines. It is, however, being superseded by more dependable machine feeding devices in large scale extrusions and high speed continuous production where constancy of feed is essential for maintenance of steady pressure at the die for uniform discharge and accurate size of product. Safety of operation as well as improved product and efficiency characterize each of the machine feeding and pressure devices now available which are applicable alike to tubers and strainers.

Royle Equipment

An automatic feeding mechanism designed originally in connection with a patented system for the continuous vulcanization of insulated wire is now available to users of tubing machines for general purposes. The general features of this device as applied to a tuber are exhibited in Figure 1. It feeds a band of rubber compound 4 inches wide by $\frac{3}{4}$ -inch thick from an open side reel into the throat.

In operation the driving cam rotates with the tubing machine stock screw and imparts to the follower and bell crank a rocking motion. This motion is transmitted to the ratchet plate carrying the feeder pawl as an oscillatory rotation about its center. The number of teeth which it engages on the feed ratchet and which controls the amount of rotation imparted

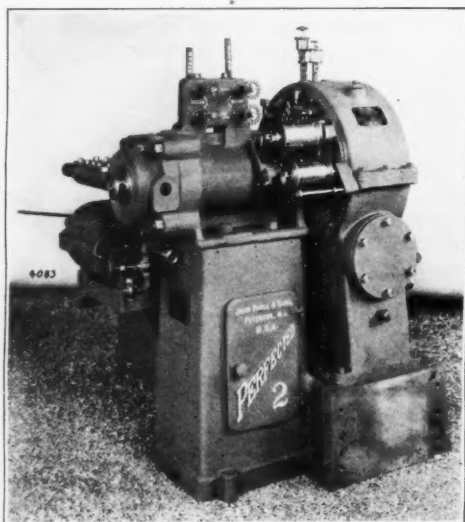
to the feeder drive roller is determined by the position of the feed regulating cam. This cam can rotate about the axis of the ratchet plate, and the number of teeth which it exposes to the pawl action is controlled by the operation of the control arm through the push rod and segment gear.

The control arm derives its signal from the size of the bolus of rubber compound which builds up in the tubing machine hopper. Thus, as soon as the stock screw empties itself to the point where this bolus decreases in size or is drawn into the throat of the machine, the control arm moves downward toward the screw. By this action it exposes the maximum number of teeth on the ratchet plate to the pawl, which thereby rotates the feeder drive roller through a relatively large angle and feeds a considerable length of the rubber compound into the throat. Conversely, as this bolus builds up, fewer ratchet teeth are exposed and less compound fed. When in proper adjustment, the pawl engages a uniform number of teeth for each stroke, and the bolus in the throat of the machine remains of comparatively constant size.

This uniform feeding results in a uniform extruding pressure and the production of smooth material. Also since the extruding worm is kept entirely filled with compound without resorting to tamping in the feeding slot, there is less tendency to trap air with the compound.

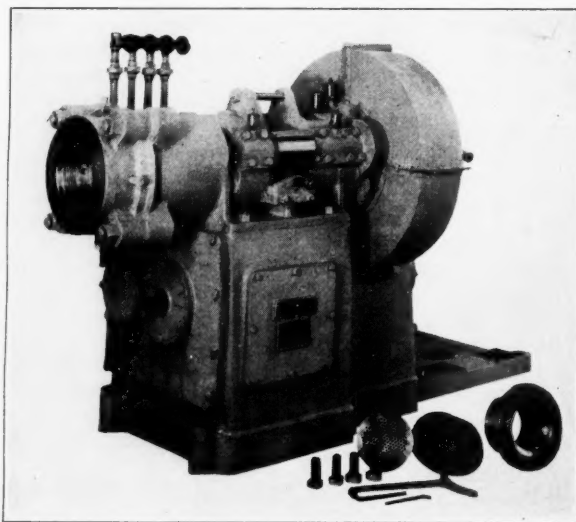
Farrel-Birmingham Equipment

The roller feed mechanism with which the machines pictured in Figures 2 and 3 are equipped is an important element in the exceptional performance with which they are credited. The roller is located in the feed opening and is driven from the main screw spindle by a pair of gears of proper ratio. It is provided with a stock guide and scraper, and the journals of the roller are mounted in bronze bearings in the smaller sizes and in anti-friction bearings in the 8-inch and larger machines. The roller is especially adapted



John Royle & Sons

Fig. 1. Western Electric Automatic Feeder



Farrel-Birmingham Co., Inc.

Fig. 2. Roller Feed Tuber

Tubers and Strainers

Extruded Products—Roller Feeds—Special Design Screw—Internal Booster

for strip feeding; but if hand feeding is employed, no skill or experience is necessary. Whether fed by strip from a conveyer or by hand in stick form, the roller constantly forces the stock into the flutes of the screw, keeping the extrusion chamber filled at all times with a definite amount of stock.

The elimination of the personal element from the feeding operation provides the highly desirable feature of uniformity in addition to increased production which amounts to 15% or more according to the nature of the product.

While special consideration has been given to temperature control by designing the cooling system for the highest efficiency, the reduction in the temperature of the extruded stock is partially a result of keeping the cylinder filled to capacity by the roller feed and the steady flow of stock through the machine. There is no opportunity for small portions of stock to assume an inactive position in the cylinder and to become overheated because of slippage of the screw on an insufficient volume of stock. Other structural features of the machine are modernized in conformity with the advance in the improved automatic feed.

In general the specifications of strainers are the same as for tubing machines of similar size. The screw has a constant pitch and in place of the die head strainer heads of the types described below are supplied.

The strainer head usually supplied for 6-inch and smaller machines is of the straight delivery type with a heat treated steel backing plate supporting the screening surface the full diameter of the cylinder. A ring nut holds the plate and screens and permits easy removal for screen changes.

On the 8-inch and larger sizes the strainer head is of the side delivery or basket type, with improved method of engagement with the end of the cylinder so that it is unnecessary to move the clamping nuts any great distance to permit removing the strainer. A positive lock is assured against

rotation in the working position. The end closure for the strainer is water cooled and is held in position by a ring nut with a spanner flange.

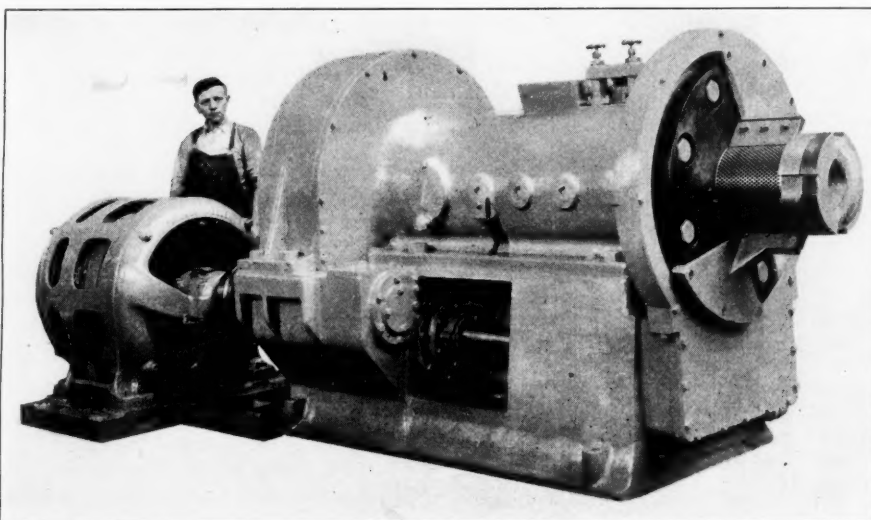
The strainer cut-off knife, pictured in the illustration, is part of the side delivery strainer mechanism on machines 8 inches and larger. It is a patented feature exclusive on these machines.

The cut-off knife is power driven by means of an extension spindle from the feed roller carrying a pinion meshing with an internal gear. The gearing is thus completely enclosed, and the cutting knife support, which is fastened to the internal ring gear, is made in rounded form to guard against injury to the operator. The cutting knife extends the full length of the strainer head or basket and during its travel around the latter severs the issuing stock so that it can fall in sheet form to any convenient receptacle for easy handling or on to a conveyer belt, thus eliminating the hand labor usually required in cutting off the stock.

New England Butt Equipment

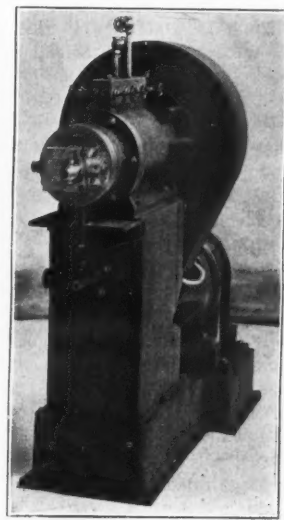
Several interesting and valuable features are embodied in the super-production tuber and strainer represented in Figure 4, distinctive among which are the elimination of massive structure, the combination in the machine of straining and insulating means, and the attainment of greatly increased output.

Besides the usual stock worm that is common to all tubers, with its heat producing slippage, a practical means for building up exceedingly high delivery pressures is introduced to relieve the stock worm of all frictional drag save that required to deliver the compound through a large aperture in the intake side of a pressure boosting element. The pressure and delivery volume are amply high to permit the introduction of the straining operation between the pressure boosting element and the extruding dies.



Farrel-Birmingham Co., Inc.

Fig. 3. Roller Feed Strainer



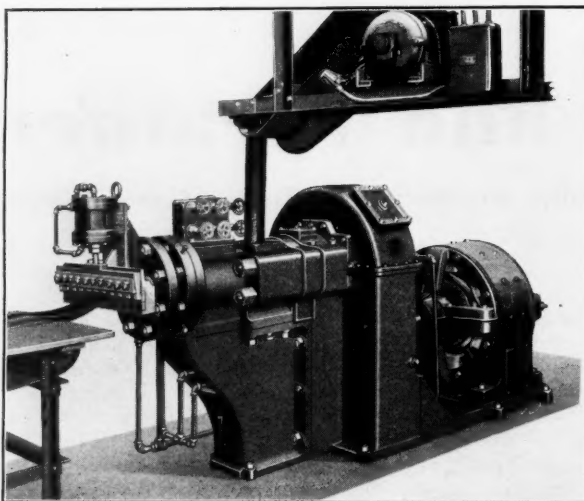
New England Butt Co.

Fig. 4. Johnson Tuber

The insulating composition is fed into the machine as usual through the hopper opening and advanced by the stock screw to the pressure boosting element which is encased in a jacketed housing. The stock is forced by the booster through a temperature controlled, quick changing strainer magazine and onward through the insulating die section.

The pressure booster element consists of a pair of gears, the revolutions of which serve to seize successive portions of the stock delivered by the feed screw through a large opening and force them with rapidly increasing pressure against the strainer. The rapid impelling action of the booster eliminates burning of the compound, and the high pressure positive movement of the material makes possible combining with high efficiency the operations of straining and extrusion.

In the wire insulation industry this machine produces uniformity of diameter of extruded wire at uniform covering speed limited only by panning or reeling efficiency. Thin walls on small wires, impossible on a worm propelled ex-



The Adamson Machine Co.

Fig. 5. Adamson Tuber

truder, can be produced by this machine at exceedingly high speeds. Delivery of insulation will vary from 20,000 to 50,000 feet per hour according to the size of the wire.

Adamson Machine Equipment

In the design of tubers and strainers typified in Figure 5 the use of mechanical feeding devices are omitted as superfluous. The statement is made by the builders that 6,000 pounds of stock have been fed into a 6-inch machine in one hour; the feed ribbon was pulled taut at all times by the action of the screw.

It should be noted that the machine, as pictured, is equipped for extruding tire treads from strip stock fed by a conveyer; yet the same principles of design are embodied in the smallest tubing machine with 1-inch diameter screw to the largest with 16-inch screw. A dependable 4-speed feature can be applied to any of this make of machines, and the stock temperature can be kept at a minimum when the tuber or strainer is extruding at record breaking speed.

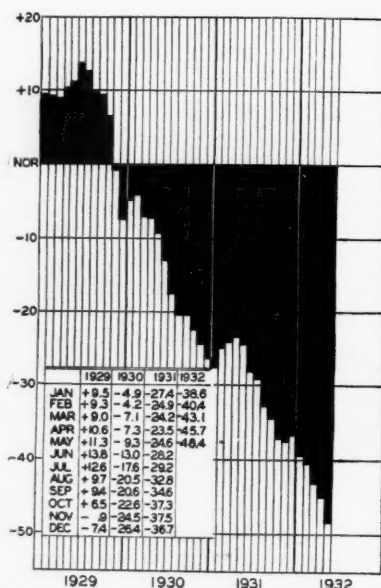
Business Activity

1929-30-31-May '32

THE volume of industrial production declined again during May to a new low point that is 48.4% below the computed normal level. Except for the month of December the decline has been continuous since April of last year. At that time business activity as measured by industrial production was about 23% below the normal level, and now it has dropped to more than 48% below. Unfortunately it does not now appear that the June data will show any improvement over those for May.

The data given in the small table within the diagram bring the index as nearly up to date as the available figures will permit. These figures may be used to bring forward the records of any of the long diagrams¹ of business activity that have been issued by this bank. The data used are records of industrial production compiled by the Federal Reserve Board and adjusted by this bank to show the percentage fluctuations above or below the computed normal level.

¹See INDIA RUBBER WORLD, July 1, 1931, pp. 112-113, and Feb. 1, 1932, p. 52.



Industrial Production

Manufacturing production in May was moderately lower than in April. Among the many components entering into the index those showing the most important declines were iron and steel and textiles. There was a slight increase in the production of lumber, which reflects the slightly better records in construction, and a good advance in the production of automobiles, mostly due to the greater activity of the Ford plants.

The sharp decline in the general index was not mainly caused by these changes in manufacturing production, but rather by a decrease in the mining of coal. All the more important users of coal are reducing their rates of consumption. This is true of the railroads, the utilities, general manufacturing, the iron and steel industry, and even domestic users. The resulting shrinkage in production is sharply reflected in the figures of the index. The May figures in the table are still preliminary and are subject to revision. *Business Bulletin*, The Cleveland Trust Co., Cleveland, O.

A Penalty and Bonus Plan

For Eliminating Heel Seconds by Pressmen

Ernest F. Thayer

ONE of the original and most serious objections to production wage incentive methods in manufacturing is the drop in the quality of the work done by the operatives on piece work or bonus.

It is unquestionably true that any system which pays the operative wholly or in part upon the amount of work that he produces tends to lower the quality of the goods turned out, in spite of any tightening up of inspection. A more rigid inspection system, regardless of the product, may perhaps assure manufacturers that poorly made goods are not shipped out to the customer, but it does not necessarily reduce the number of seconds or worthless pieces produced. This fact is especially true of the operation of molding heels, where carelessness perhaps on the part of a pressman in not properly bumping the press on one deck might result in ruining a hundred or more pairs of heels. It is, therefore, almost always necessary to develop a balancer scheme on different operations in factories that are operated on a production basis so that the quality of the heels produced may be kept as nearly 100% firsts as possible in spite of the greatly increased production per man hour.

One of the most efficient and satisfactory methods used to reduce the number of poor heels produced is the penalty and bonus scheme. This plan is one which sets a maximum limit of seconds or useless heels that may be produced; any increase in the number of seconds penalizes the operatives or any decrease pays them a bonus of a stated amount per 100 pairs. Such a scheme may be used with telling effect on this important operation, for it not only tends to decrease the amount of poor work done but it also brings to the attention of the supervisors any radical trouble that is encountered by the pressmen, which influences the quality of the product upon which they are working, but which is beyond their power to control. An operator, naturally, will not use faulty stock in his molds any length of time without calling the foreman's attention to it because it is costing him money when he is on a penalty basis.

It is usually not expensive to obtain the data necessary to operate such a scheme from week to week as the following tickets or labor cards that accompany all lots of stock show who performed the operation in question, enabling the checkers to keep an accurate record of the poor work turned out. While records of work in process are handled radically different in all plants, usually sufficient records are kept on each lot or order as it goes through the shop to enable the payroll department to obtain the necessary information required to operate the scheme.

The amount of bonus paid for good work need be only a small proportion of the amount saved through the elimination of faulty work to interest the workmen, also the penalties exacted need not be great to attract their serious attention to the idea.

The operation of this scheme for reducing seconds due to faulty heel molding is illustrated by the following example taken from practice.

An analysis of the seconds on men's heels amounted to approximately 3.5% of the total number molded and showed that 2% of the faults were due to causes beyond control of the pressmen, while 1.5% of the poor heels were directly chargeable to carelessness in their work. The elimination of the 1.5% of seconds was the objective. The pressmen were notified that they would be paid a bonus or charged a penalty in accordance with the percentage of all poorly molded heels above or below 2%. All types of defects in the heels due to faulty molding work on their part were to be considered. For every $\frac{1}{4}\%$ less than 2% seconds on the heels molded they were paid a bonus of $\frac{1}{4}\text{¢}$ per 100 pairs on the total number of heels they produced. The bonus scale was also sliding so that as the percentage of seconds dropped the bonus per 100 pairs increased. Thus if a pressman reduced his seconds to 1% or less he received a bonus of $1\frac{1}{4}\text{¢}$ per 100 pairs. If seconds increased above 2%, however, he was charged a penalty of $\frac{1}{2}\text{¢}$ per pair on the total number of heels he produced. This penalty also increased until at 3.5% the penalty became $3\frac{1}{2}\text{¢}$ per 100 pairs.

Bonus and penalty results were paid weekly. If during the week a pressman ran 18,000 pairs of heels of which only 1.27% were seconds, he received a bonus of 1¢ per 100 pairs on his total run or \$1.80. If on the other hand he had a seconds percentage of 3% he was penalized $1\frac{1}{2}\text{¢}$ per 100 pairs or \$2.70.

It is obvious that the penalty for an excessive number of poor heels is greater than the reward for running good heels. The reason for that is to urge the pressmen to eliminate poor work.

This scheme actually effected a decrease in the percentage of poor heels from over 4% to an average of $1\frac{1}{2}\%$. The amount of money saved was far in excess of the bonus paid. Thus 100 pairs of ruined heels cost the company perhaps \$8 while possibly only 50¢ had to be paid in bonus to save that serious loss.

In applying this scheme the men were not penalized for seconds spoiled during molding because of difficulties for which they were not responsible, and only the faults that they could have eliminated were charged against them.

DEFECTS IN HEELS CHARGEABLE TO PRESSMAN

1. Loose washers on surface of heels
2. Heels cut by pressman
3. Dirty molds
4. Dirty stock
5. Misshaped heels
6. Sunken edges
7. Improperly cured heels
8. Torn edges
9. Use of small stock
10. Excessive overflow
11. Blistered heels

DEFECTS IN HEELS NOT CHARGEABLE TO PRESSMAN

1. Heels cut by trimmers
2. Defects caused by improper compound.
3. Defects caused by poor or faulty equipment, faulty molds, and poor hydraulic pressure.
4. Defects caused by improper handling of heels after the molding operation.
5. Any defect due to reasons over which the pressman has no control.

Hospital Rubber Sheeting¹

PURSUANT to a request from the American Hospital Association, the Department of Commerce submitted to the industry a recommended commercial standard for hospital rubber sheeting. The industry has since accepted and approved for promulgation by the Department of Commerce, through the Bureau of Standards, the standard as shown below.

COMMERCIAL STANDARD

Scope

1. This commercial standard is a minimum specification for hospital rubber sheeting. It covers chemical and physical requirements of this commodity.

Types and Colors

2. Types.—(a) Single coated (on one side); (b) double coated (coated on both sides).
3. Colors.—Maroon, white, or cream colored.

Material and Workmanship

4. The sheeting shall be made from a cotton fabric coated on one or both sides, as specified, with a rubber compound. It shall have a smooth, uniform, soft finish, free from pits or other imperfections. The material shall be rubber coated to the full width specified.

General Requirements

5. The finished sheeting shall be of maroon, white, or cream white color as specified.
6. The rubber compound shall contain not less than 30% by weight of best quality, new, wild, or plantation rubber.

Detailed Requirements

7. The finished sheeting shall be 36, 45, or 54 inches wide as specified.
8. A tolerance of plus or minus 1 inch will be allowed in width with compensating additions in length for any deficiency in width of $\frac{1}{2}$ inch or over.
9. The tensile strength shall be not less than 50 pounds, warp and filling, when tested according to paragraph 15.
10. The sheeting shall show no change which might affect its serviceability when subjected to the action of steam according to paragraph 16.
11. The sheeting shall resist the action of phenol when tested according to paragraph 17.
12. The sheeting shall be waterproof, see paragraph 18.
13. The thickness of coated sheeting shall be as follows:

Type (a)	0.014 inch \pm 0.001 inch
Type (b) .....	.020 inch \pm .002 inch

Methods of Sampling, Inspection, and Tests

14. Sampling.—One sample 18 inches long and the full width of the roll shall be taken at random from each 100 rolls, or less, delivered for test and analysis.
15. Tensile strength.—Tests shall be made within 30 days from date of delivery by the grab method with 1-inch jaws, 3 inches apart, at a speed of 12 inches per minute.

¹Commercial Standard CS 38-32. Effective for new production June 7, 1932. Published by United States Department of Commerce, Bureau of Standards, Washington, D. C.

16. Resistance to steam.—A sample, 6 inches square, of coated sheeting, shall be subjected to the action of steam at a pressure of 15 pounds per square inch for 20 minutes, removed, and after 2 hours again subjected to the same steam test. Inspection should be made after 24 hours at room temperature.

17. Resistance to phenol.—A sample 6 inches square, of coated sheeting, after being submerged in 5% phenol for 18 hours at room temperature shall show no change which might affect its serviceability.

18. Test for waterproof quality.—The finished sheeting shall withstand a hydrostatic pressure of 80 pounds per square inch for 5 minutes without leaking. The water pressure shall be applied over an area of 1 square inch.

Packages and Marking

19. The material shall be supplied in rolls containing approximately 25, 50, or 60 yards.

20. Each roll of sheeting shall be wrapped in paper and sealed. The seal shall bear the manufacturer's name or trade name, date of manufacture, and the name and quantity of sheeting.

21. The seal or label shall state that the sheeting conforms to the requirements of the commercial standard for hospital rubber sheeting, the following label being recommended:

..... 193
(Date of manufacture)

This roll of hospital rubber sheeting containing yards, is certified to conform to all requirements of Commercial Standard CS 38-32 for Hospital Rubber Sheeting issued by the United States Department of Commerce.

The Company.

Method of Procedure

Industry has long recognized the value of a wide application of specifications developed and approved by nationally recognized organizations. For those desirous of securing this result, the Bureau of Standards has a procedure whereby such specifications, properly indorsed, may be printed as official publications of the Department of Commerce and promulgated as "commercial standards." The cooperation of the Bureau of Standards for this purpose is available only upon written request.

As a producer, distributor, or consumer of some of the commodities for which commercial standards have already been established, you are in a position to avail yourself of the benefits arising from the use of quality standards.

The first step is a declaration in favor of the standard by recording your intention to adhere, as closely as circumstances will allow, to the standards for those products which you may buy or sell.

The receipt of your signed acceptance will permit the listing of your company in new editions of the commercial standards that you accept.

The acceptance of a commercial standard is an entirely voluntary action and applies to the production, sale, and use of stock items. It is not meant to interfere with the introduction, manufacture, or sale of special sizes and types sometimes required, nor to restrict the ingenuity of the producer in the employment of new materials, processes, or methods.

Compounding Latex

Joseph Rossman, Ph.D.

THE following is a continuation of the information on United States patents relating to the compounding of latex, from our September 1, 1932, issue.

84. Blombery, 1,720,716, July 16, 1929. A coating composition for paper is made by mixing 10 pounds of kaolin with sufficient water to make it into a thick slurry with 4 pints of stabilized latex in a rubber mill or rotary mixer until thoroughly emulsified. To this emulsion 20 pounds of blanc fixe, 5 pounds of satin white, $1\frac{1}{2}$ pounds of casein, and $\frac{1}{2}$ pound of talc are added with water up to 4 or even 5 pounds; and the mixture, again subjected to agitation, should be about the consistency of glycerine, and further water may be added to attain this consistency. The mixture is strained through an 80- to 90-mesh screen and is then ready for application.

85. Roman, 1,720,747, July 16, 1929. A waterproofing and flameproofing composition comprises 75 parts ammoniacal rubber latex solution containing about 30% rubber, 300 parts triammonium phosphate solution of about 25% strength, and 1 part ammonium polysulphide.

86. Biddle, 1,722,553, July 30, 1929. An adhesive comprises latex, tapioca meal, lime, and water.

87. Ruderman, 1,723,581, Aug. 6, 1929. A composition for rendering paper waterproof and greaseproof comprises rubber latex 10 to 12%, boiled starch 1 to 20%, a soluble metallic polysulphide 0.5%, sodium silicate 1 to 3%, sodium carbonate, and formaldehyde.

88. Christmas, 1,724,906, Aug. 20, 1929. A leather substitute is made from the following: casein 1 pound, water 4 pounds, raw uncoagulated rubber latex 4 pounds, ammonia (26°) 2 ounces, sulphur $\frac{1}{2}$ ounce, lime (hydrated) $1\frac{1}{2}$ ounces, ammonium sulphate $\frac{1}{2}$ ounce, litharge or zinc oxide $\frac{1}{2}$ ounce, and tetramethylthiuriamdisulphide $\frac{1}{4}$ ounce. The casein is reduced to a soluble state by heating it with water to 160 to 200° F. with the strong ammonia. This gives a thick, heavy, smooth paste, the dissolving of the casein in the strong ammonia water being complete. The sulphur, lime, ammonium sulphate, zinc oxide or litharge, and the tetramethylthiuriamdisulphide are then added to this paste and thoroughly incorporated therewith by stirring or otherwise; after which action the rubber latex is gradually added to the mixture while it is stirred or agitated to incorporate thoroughly the same therewith. The combination of the ingredients is effected while the mixture is being subjected to heat within the temperature ranges noted. A smooth, thick, pasty-like mass is thus produced, which may be molded or otherwise shaped into a desired form and yet is smooth and limpid enough to be poured over upon a slab, table, or other similar surface.

89. Davey, 1,726,473, Aug. 27, 1929. A heat-hardening japan comprises an emulsion in water of the following ingredients by weight: about 17 parts of vegetable oil, about 15 parts of gilsonite, about 5 parts of rubber, and about one part of lampblack.

90. Scholz, 1,729,522, Sept. 24, 1929. To fresh latex is added 0.5% of a salicylate together with 0.25% of potassium hydroxide, and the mixture is then concentrated.

91. Hauser, 1,729,651, Oct. 1, 1929. A composition for

extruding tubes follows: 40 parts of sulphur, 100 parts zinc oxide, 6 parts oil red G, and 344 parts whiting are incorporated in a suitable mixing machine into 400 parts of latex concentrated into the form of a paste containing 75% solid constituents, and the resulting mass is dried. The compounded mass is passed for 5 minutes between rollers and introduced into a tubing machine.

92. McGavack, 1,730,518, Oct. 8, 1929. To 100 cc. of rubber latex containing 20% of solid material and $\frac{1}{2}$ - $1\frac{1}{4}$ % of ammonia is added 2% by volume of ethyl alcohol diluted to 50% strength. It is desirable to stir the latex during the addition of the alcohol to secure uniform distribution. This latex is approximately twice as stable as the same kind of latex containing the ammonia, but no alcohol.

93. Reel and Cude, 1,735,547, Nov. 12, 1929. Water is emulsified in an oil containing resin acid to form a grease-like product comprising a water in oil emulsion. This emulsion is reversed by adding enough sodium hydroxide to form sodium resinate in the emulsion. Upon continued agitation the emulsion reverses its phases, and the oil becomes dispersed in the water. In this state it is added to rubber latex.

94. Hopkinson and Teague, 1,736,404, Nov. 19, 1929. A cold water paint consists of: gilders whiting 82 parts by weight, mineral flour 10 parts by weight, glue 3 parts by weight, enough latex to make dry rubber, 5 parts by weight, water 33 parts by weight. In mixing this composition first glue is dissolved in water, the whiting and the mineral flour are mixed together and added to the water, and the latex is incorporated last to prevent its coagulation.

A hardening effect may be secured by adding to the composition given vulcanizing mixtures functioning at ordinary temperatures such as oxy normal butyl thiocarbonic acid disulphide and zinc butyl xanthogenate and dibenzyl amine with sulphur and zinc oxide.

The following composition is an example of a paint having properties more closely approaching the oil paints and containing a higher percentage of latex: gilders whiting 5 parts by weight; mineral flour 5 parts by weight; silurian shale 5 parts by weight; glue 10 parts by weight; latex sufficient to give dry rubber, 25 parts by weight; water sufficient to make a fluid having approximately the consistency of a thin cream. In combining the ingredients the silurian shale is soaked in water and in the form of a 5% suspension is added to a water solution of the glue containing gilders whiting and mineral flour. The latex is added last.

95. Calvert, 1,739,479, Dec. 10, 1929. The exterior of the gas bag of balloons is coated with 6 films. The first consists of latex, glycerine, water, and hydroquinone; the second of latex, glycerine, water, hydroquinone, and aquadag. The third film is similar to the first, but is more dilute. The fourth film consists of a thin solution of rubber hydrochloride or other waterproofing agent, and the fifth consists of some good grade of varnish. The last film comprises a bronzing material, which may be a fine aluminum dust sprinkled or brushed over the surface while it is moist. The interior of the bag is treated in a somewhat similar manner.

96. Ali-Cohen, 1,739,566, Dec. 17, 1929. A substitute for gutta percha follows. A solution is made of 500 grams of white soap in 5,000 cc. of water. To the boiling solution is added a little strong sodium hydroxide; then 250 to 500 grams of colophony, 100 to 500 grams of shellac, and 500 grams of beeswax are stirred in. The whole is thoroughly stirred until a homogeneous emulsion results. Next 1,500 cc. of rubber latex, containing 540 grams of dry rubber, are diluted with about 3 liters of water, and the diluted latex is added, warm, to the warm resin-soap emulsion and well stirred. Coagulation is effected with a 5% alum solution, containing 350 grams of crystallized alum. There is obtained a fine grained coagulum which is lixiviated in hot water until a neutral reaction is obtained. It is then pressed out between hot rollers. By this process a sheet is formed which is dried afterwards. The mass so obtained has physical and electrical properties corresponding exactly to those of gutta percha, but it is much cheaper.

97. Levin, 1,740,184, Dec. 17, 1929. A cement for bottle cap closures consists of 8 pounds of albumen dissolved or swelled in 15 pounds of water. To this are added 2 pounds of latex. The compound is thoroughly stirred and agitated to produce a homogeneous product.

98. Dewey and Crocker, 1,745,084, Jan. 28, 1930. Latex cement is made as follows: Take 90 parts of flowers of sulphur, 15 parts of the colloidal clay, bentonite, and 3 parts of saponin, and mill or otherwise intimately mix these with 590 parts of water. Then add 462 parts of latex containing about 38% of the solids naturally occurring therein. This composition, though sufficiently fluid to serve all the purposes of a vulcanizable cement (as for the setting of brush bristles), will hold its sulphur in suspension and distribution almost indefinitely without appreciable settling.

99. Beckmann, 1,745,057, Feb. 4, 1930. Porous rubber products such as diaphragms for storage batteries are prepared as follows: To 100 ccm. of normal latex containing about 35% rubber are added 2 grams of finely subdivided sulphur. Into this mixture are stirred 5 cc. of a solution of magnesium sulphate saturated at normal temperature; this salt solution is diluted with 190 cc. water. After about 2 minutes, if the temperature be about 25° C., the mixture thickens and after about 15 minutes is converted into an elastic jelly-like product. Before the mixture has set in this manner it is poured into suitable molds, allowed to stand for a few days, and then vulcanized.

100. Esselen, Jr., and Rose, 1,746,888, Feb. 11, 1930. Paper is coated with the following composition: 15 pounds of shellac are dispersed in 3 gallons of water containing 3 pounds of borax. With this 100 pounds of finely divided clay are carefully mixed. To the resulting mixture sufficient rubber latex, containing approximately 1% of ammonia as a preservative, is added to produce 10 pounds of rubber solids in the mixture.

101. Fischer, 1,748,016, Feb. 18, 1930. An expansion joint strip is formed from a mixture of the following ingredients: latex 5%, (consisting of 33% rubber and 2% ammonia), bituminous material 80%, and fibrous matter 15%. The compounding is carried out by melting the bituminous material to a liquid or plastic state, by utilizing a liquid or semi-liquid bituminous material, adding thereto uncoagulated latex, and then adding the bituminous material.

102. Carson, 1,750,460, Mar. 11, 1930. Balloon fabric is coated with a composition containing 40 parts gelatin, 10 parts fibrin, 30 parts glycerin, 200 parts latex (37% rubber), and 300 parts water.

103. Pestalozza, 1,750,540, Mar. 11, 1930. The process comprises adding to latex 0.5 to 2.5% of diphenylguanidine and then putting into contact with the latex a heated former of the shape and the size to give the article desired, heated to 70 to 95° C. to produce at the surface a layer of rubber.

104. Teague, 1,750,767, Mar. 18, 1930. Twelve and one half parts of acidic pine tar are carefully neutralized with 0.22-part of sodium hydroxide or an equivalent of ammonia. With the neutralized tar are mixed 12½ parts of cumar resin. The mixture is warmed and emulsified in 17 parts of water containing 1.25 parts of saponin or Karaya gum. The emulsion, comprising approximately 44 parts, is then mixed with 100 parts of rubber as latex. This composition will be stable for at least 2 months. It may be used as a shoe cement.

105. Malm, 1,752,531, Apr. 1, 1930. The method of producing a rubber insulating material for submarine cables comprises diluting rubber latex with 4 parts of a sodium chloride solution to one part of latex, heating to a temperature of 150° C. for 9 hours, thereby coagulating the latex, then washing the coagulum in hot water and drying in the air.

106. Jacobsohn, 1,752,637, Apr. 1, 1930. Gas impermeable fabrics are made from a mixture of cuprammonium cellulose and latex. Dissolve 0.29-gram of tetramethylthiuriamdisulphide in 15 cc. of hot acetone. Add this solution quickly to 400 cc. of water at 20° C. This is immediately followed by vigorously agitating in 70 grams of rubber latex containing 40% of solid matter. Three grams of zinc sulphate, dissolved in 10 cc. of water, are treated with 7 cc. of ammonia water containing 29% ammonia. The white precipitate formed at first should be completely dissolved before proceeding further. This solution is then added to the latex solution above, with vigorous agitation. Then 250 grams of cuprammonium cellulose are added to the mixture and stirred until a homogeneous mixture results. The cuprammonium cellulose-latex mixture prepared by the above method should be kept at a temperature not exceeding 20° C. until applied.

To prepare a gas impermeable fabric from the cuprammonium cellulose-latex mixture, it is spread upon a balloon cloth, in 8 to 15 coats, depending upon the permeability desired. Each coat is dried by the passage over its surface of a current of air heated to 40° C. before the application of the next coat. When the last coat is dry, the fabric is immersed in a 2% solution of sulphuric acid to dissolve the copper oxide deposited with the film. The fabric is washed thoroughly with water and finally immersed in a 15% solution of glycerine. The fabric is then air dried.

107. Holmberg, 1,754,827, Apr. 15, 1930. Montan wax is emulsified in the presence of a small amount of glue, saponin, Karaya gum, or other suitable agent. The oil is included in this emulsion. A dispersion of a filling material such as gilders whiting in an aqueous dispersion of rubber, either artificial latex or the natural latex, is prepared, and to it is added the emulsion of the wax and glue. The proportions used are: 100 parts rubber as latex; 125 parts gilders whiting; 20 parts Montan wax; 30 parts spindle oil; 10 parts glue. This composition is used for waterproof coatings.

108. Wescott, 1,756,411, Apr. 29, 1930. A hard molded switchboard panel is made from asbestos, latex, hemoglobin, and zinc oxide, containing about 60% short fiber asbestos and 40% of other materials. The amount of rubber in the bond is 8%. In making this composition 3 parts of hemoglobin (3% of the final mixture) are dissolved in sufficient dilute latex to correspond to 8 parts of rubber. To the liquid is added 3.2 parts sulphur. In the presence of the hemoglobin, this sulphur is easily dispersed throughout the liquid. There is further added to the liquid a filler composed of 4.8 parts of litharge, 6 parts zinc oxide, 4.8 parts bauxite, 8 parts barytes, and 5.2 parts whiting. The mixture, so far, is a sort of magma from which the latex, colored red by hemoglobin, tends to separate. It is vigorously stirred and warmed to about 100° F.; whereupon it assumes a batter-

like consistency by the reaction between hemoglobin and zinc oxide. The batter is diluted somewhat with water and stirred into the 60 parts of short fiber asbestos.

The wet mass is placed in tray molds to form slabs, which are dried on wire gauze shelves in a suitable drier; the temperature must not exceed 150° F., and the entering air is conditioned to about 20% relative humidity. The resulting dry slabs are shredded and granulated. A charge of granulated material is put into a plunger type mold, where it is given a 3:1 compression to form slabs adapted for switchboard panels. Compression is at a temperature somewhat above the melting point of sulphur, and the pressure is about 2 tons per square inch, exerted for a few seconds. This action completely eliminates the voids. Final curing is in an open-type mold.

The procedure, as so far described, gives a slab of whitish appearance, because of the great quantity of asbestos and white filler present. In making black surfaced switchboard paneling, the operation is in the same way, save that in the plunger mold is first placed a thin layer of a composition made the same way, but carrying somewhat more rubber. The rest of the mold is filled with the composition described. On applying pressure the facing layer becomes unitary with the body layer. Other materials such as synthetic resin compounds may be used in the same manner for facing layers.

109. Hazell, 1,757,632, May 6, 1930. The following illustrates the invention: (A) A sodium hypochlorite solution is prepared from 200 grams chlorinated lime (available chlorine approximately 24%), 140 grams anhydrous sodium carbonate, 1,200 cc. water. Precipitating material is filtered off. (B) A solution of lower alkalinity is prepared by adding 40 grams of boric acid to Solution A.

Example 1: To 100 cc. of rubber latex, normal solids content (38%) preserved with 0.3% of formaldehyde and stabilized with 1.5% of nekal, 10-20 cc. of Solution A are stirred in. After standing a few hours the latex becomes thick, and if it is spread on fabric and air dried around 80° C., the rubber laid down will be found to possess green tack far in excess of that of the same latex not so treated. If not stirred, the consistency of the latex increases, and at the same time its filterability is markedly improved. Moderate stirring immediately after the addition of Solution A decreases the consistency while effecting increased filterability. After standing over night the latex creams, a lower layer which constitutes about $\frac{1}{3}$ of the whole volume being clear bright serum. In addition the stability of the latex increases as shown by the hand rubbing test. After standing several days the consistency of the cream increases (mobility decreases), forming a smooth paste which is readily redispersible. If so desired, the action of the hypochlorite may be checked by adding an antichlor, e. g. sodium thiosulphate or an equivalent in an amount sufficient to react completely with the unchanged hypochlorite. The addition of the sodium thiosulphate also promotes creaming of the latex. For example, if to the latex treated as above 2 to 3 cc. of 3.6% sodium thiosulphate solution are added, the clear serum constitutes about $\frac{1}{2}$ the total volume.

110. Rowland, 1,757,928, May 6, 1930. A film of latex containing zinc oxide, sulphur, and an accelerator is applied to a drum on which it is coagulated¹.

111. Sadtler, 1,758,914, May 13, 1930. The method of making a paving material consists in adding, with agitation, to a given volume of a rubber latex an equal volume of sulphonated castor oil, an equal volume of kerosene, then diluting the mixture by adding kerosene down to a point where the rubber content is from 2 to 10% of the weight of the liquefier, then adding one gallon to $1\frac{1}{2}$ gallons of the diluted liquefier to 1,900 pounds of cold graded aggregate

and agitating to distribute the liquefier thoroughly over the surfaces of the aggregate, and then adding to the latter, while the agitation is continued, from 35 to 140 pounds of bituminous material heated to 150° F. to coat thoroughly the individual pieces of aggregate with the bituminous material.

112. Hopkinson and Gibbons, 1,759,618, May 20, 1930. The process for manufacturing sheets and strips of rubber consists in depositing a layer of rubber from a compounded latex upon a moving pervious web of felt or braided fabric, withdrawing the aqueous portion of the latex through the web, supplying heat to the web to hasten drying of the layer, cutting the partially dried layer of rubber by knives wet with a latex coagulant, detaching, and separately recovering the strips thus formed. The following is an example of the composition used: ordinary rubber latex which has been preserved with ammonia is freed of the ammonia and then treated with $\frac{1}{2}$ % of phenol and 0.06% of trisodium phosphate.

Using this treated latex, the following composition is prepared: 100 parts rubber as latex, 1 part zinc oxide, 2 parts precipitated sulphur, $\frac{1}{2}$ part oxy normal butyl thiocarbonic acid disulphide, $\frac{1}{4}$ -part dibenzylamine, $1\frac{3}{4}$ parts glue, $1\frac{1}{2}$ parts solvent naphtha. The various ingredients are mixed with the latex in the form of emulsions. The zinc oxide and the sulphur are mixed to a thick mush with water and added to a water solution of glue and thoroughly mixed. The oxy normal butyl thiocarbonic acid disulphide is mixed with the solvent naphtha and emulsified with a water solution of glue in the presence of a small amount of sodium oleate. The dibenzylamine is emulsified in the same way.

The above composition, allowed to stand for several weeks, becomes vulcanized and thickens somewhat. This vulcanized latex composition has the property of filtering rapidly or depositing its solid portion upon a pervious filtering medium while the aqueous portion passes through the medium. This composition is fed on to the belt as described above.

Another example which may be used is 100 parts of rubber as latex containing 33% solids, 80 parts of gilders whitening, 20 parts of mineral flour, $3\frac{1}{2}$ parts of colloidal sulphur, 1 part of zinc oxide, 1 part of glue, $\frac{1}{2}$ part of zinc dimethyldithiocarbamate. The fillers are added in the form of a water paste, and sufficient ammonia is added to bring the ammonia concentration up to 1%. A further amount of water is added to make a total of 145 parts of water. This composition, when used in the above invention, will form a deposit upon the belt approximately 0.069-inch thick in 2 hours.

113. Biddle, 1,762,152, June 10, 1930. A composition suitable for a surface size or a coating for paper, textiles, and fabrics, consists of 100 parts by weight of rubber in aqueous dispersion (approximately 35% rubber content), 100 parts by weight of saponified rosin (approximately 25% rosin content), 50 parts by weight of colloidal clay, and 25 parts by weight of satin white. A method of saponifying resin is to subject it to the action of 15 parts by weight of sodium carbonate to 100 parts of resin and from 200 to 400 parts of water, and heating.

(To be continued)

MANY AUTOMOTIVE ENGINEERS A FEW YEARS AGO WERE very positive in their prophecies that rubber would never hold up in the many new forms in which it was being offered for making riding easier and cars last longer; yet the service director of a British motor corporation says that in 5 years' experience he has found no instance in which rubber fittings have disintegrated. Evidently in transportation alone the limit of rubber's usefulness is still far from being realized.

¹See "Goods from Compounded Latex," INDIA RUBBER WORLD, Oct. 1, 1930, p. 57.

EDITORIALS

Buy Equipment Drive

INDUSTRIAL leaders are developing elaborate plans to provide work during the coming winter for the great army of the unemployed. Manufacturers are being urged to take advantage of the present low cost of materials and labor by replacing any worn out machinery that they may have in use.

In order to avoid the direct outlay of money the majority of manufacturers have patched and robbed one machine for another during the past 3 years so that the equipment of many rubber companies is in very poor condition. It is apparent that any appreciable upturn of business will necessitate the purchase of new equipment and many spare parts that are usually carried in stock.

The manufacturing division of the rubber industry should, therefore, actively support the proposed drive for buying new equipment and prepare to meet alert competitors.

Helium in Rubber Drying

WITH helium now available at moderate cost and in commercial quantities, and the government's needs amply assured, much speculation is being indulged in regarding applications other than aeronautical of this unique element. Its discovery and development have often been cited as a striking example of the value of pure scientific research. First detected in the solar spectrum in 1868 by Lockyer, its existence on the earth was not proved until 1895 when Ramsey isolated it from a uraninite ore. In 1917 it is said there were not 25 cubic feet of it available in the world, and that small lot was valued at \$62,500.

A troublesome ingredient in certain natural gas fields proved to be helium. Bids from the British for a safe gas to replace hydrogen in inflating their blimps at almost any price spurred investigation. A field in Texas was found the most promising and it is said, produces all the government needs; and such being the case, it is argued, commercial concerns should now be allowed to develop other possible sources. Perhaps the time is not far off when, as a result of such development, the rubber industry, for instance, may see the gas employed for not only inflating rubberized airships, but for drying much of its crude material.

Chemically inert, non-inflammable, and with a heat conductivity about 6 times that of air, helium is regarded as

an ideal medium for the dehydration of rubber and various organic and other substances. Contrasting its advantages with vacuum drying, it is claimed that drying in a vacuum is necessarily a much slower process because of low heat transference allowing material to reach a low temperature with consequent vaporization of moisture. Even the circulation of heat within the chamber, it is said, will avail but little. Helium is credited with not only greater heat transference, but ability to maintain uniform temperature and, as a fixed gas, can dry a material much faster than other media when it is circulated for the removal of aqueous vapor.

Mechanical Goods from Latex

WHILE the commercial development of liquid latex continues steadily but surely in major industries such as paper, textile, and cordage, it is generally supposed that small progress is being made within the rubber industry itself. Dipped rubber goods, rubber cements, rubber thread, and the preparation of certain fabrics have been fairly won by liquid rubber. But it is not generally known that commercialized latex products are being developed in other branches of the rubber industry.

According to recent patent disclosures, tire treads are being made of strips of latex coagulum continuously extruded from a tank through slots and plied up to correct thickness on a conveyer belt for further processing. Cotton jacketed hose can be made by passing an aqueous dispersion of rubber or latex into the interior of a tubular fibrous body. Liquid rubber is utilized in a recent development for coating wire with insulating material. So it seems that latex is making a very good start in tires and mechanicals that may entirely change the technology of mechanical goods manufacture.

A RUBBER PLANTER'S IDEA OF SUBLIMELY SIMPLE FAITH is the piling up by a European dye trust of patents for the complicated synthesis of isoprene, methylbutadiene, and other costly chemicals while real rubber is under 7 cents a pound. But maybe the trust is wise. It may foresee a shortage in a few years that will take the natural product from the Woolworth and put it into the Tiffany class, and thereby provide a real market for synthetic on a lower range.

What the Rubber Chemists Are Doing

Micellar and Molecular Solutions of Rubber¹

IN CONNECTION with his molecular study of rubber, Paul Bary makes the following statements:

Viscosity employed to express the duration of the flow of a rubber solution is not exact until changes in molecular structure have advanced to a certain stage.

The formula that viscosity approaches that of the solvent alone when these changes are at their maximum, in conjunction with that by Staudinger relating

¹ Paul Bary, *Rev. gén. caoutchouc*, Jan., 1932, pp. 3-8.

molecular weight to viscosity, indicates that when the limit of change is reached, the molecule no longer is greater in length than its transversal diameter. It is a fact that when molecular evolution is carried far enough but is still far from its limit, it becomes impossible to coagulate the solution by acetone to recover the contained rubber.

The structure of rubber may exist in 3 stages: a solid jelly, a liquid jelly, and a solution. The solution stage comprises micells swollen with solvent dispersed in a

true rubber solution. Thus there are both micellar solutions and molecular solutions of rubber.

Rubber that is not in a sufficiently rapid state of evolution is practically not modified by oxygen in the air, but when it is changed by heat, milling, etc., the molecular evolution, expressed in a reduction of the length of the polymers present, liberates affinities at the extremities of the new molecule created by the action and makes the rubber that is being tested very susceptible to the action of the oxygen of the air.

Measurement of the pH of Latex by the Antimony Electrode

THE antimony electrode is being investigated at the Bureau as a means of determining the pH of the ordinary ammonia-preserved rubber latex. Measurements that have been made on latex samples ranging from pH 8 to pH 11 indicate that this electrode gives constant and reproducible readings and is free from disadvantages inher-

ent in other types of electrodes when used in latex. The hydrogen electrode can not be employed in latex on account of the deposition of rubber on the platinum black surface. The quinhydrone electrode gives erroneous results when the latex is in the strongly alkaline range above, say, pH 8.5. The glass electrode, on the other hand, has

given good results with latex, but has the practical disadvantage that either an electrometer or a vacuum tube galvanometer is required to measure the electromotive forces through the high resistances that are involved. The antimony electrode, however, can be used with ordinary electrometric apparatus which is relatively simple in operation.

The antimony electrode is used in the form of a cast stick of the chemically pure metal and is calibrated in appropriate buffer solutions against the hydrogen electrode.

This work is being done in connection with the development of a general procedure for making laboratory test specimens directly from rubber latex by electrodeposition. *Technical News Bulletin of the Bureau of Standards*, June, 1932.

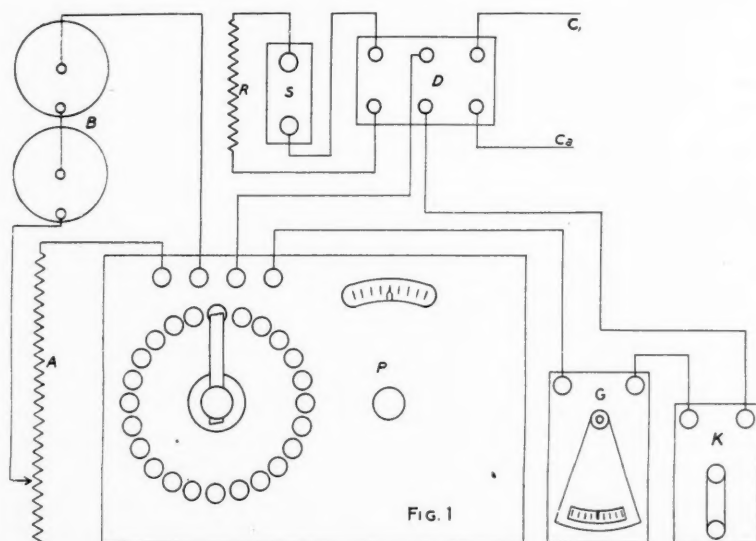


Fig. 1. Potentiometer and Accessory Equipment for pH Measurements

(A) Variable resistance of at least 1,000 ohms maximum used for adjusting the potentiometer; (B) One or two dry cells or one cell of a lead accumulator; (R) Resistance of 5,000 to 10,000 ohms to protect the standard cell; (S) Standard cell of accurately known e.m.f.; (D) Double pole, double throw switch connecting the potentiometer circuit to either the standard cell or the cell of the solution the pH of which is to be measured; (P) Potentiometer, for measuring the e.m.f.; (G) Null-point galvanometer; (K) Key; (C₁ and C₂) Leads to the antimony electrode and calomel half cell.

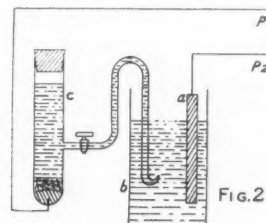


Fig. 2. Cell for pH Measurements

(a) Antimony electrode made by casting c.p. antimony metal in a pyrex glass tube of 5 to 10 mm. inside diameter; (b) Container of latex of which the pH is to be measured; (c) Calomel half-cell; (p₁ and p₂) Leads to the potentiometer circuit.

Mechanism of Masticating Rubber¹

W. F. Busse²

THE mechanism of the breakdown of rubber on the mill has been investigated by many workers, and many different theories have been advanced to explain the changes which occur. In some cases the theories have been based on a postulated structure of the latex particle, but, more often, they were explanations based on the author's pictures of the structure of the rubber molecule. Countless attempts have been made to distinguish between "depolymerization" and "disaggregation" of rubber molecules, where in many cases the principal difference is merely one of definition.

Data have recently become available to show that milling is not the simple mechanical process it once was thought to be, but that it is essentially a chemical reaction.

Summary

The effects of milling and of exposure to light are similar in altering smoked sheet, pale crepe, and balata so that they affect a photographic plate in the dark. This effect is due to the formation of a volatile peroxide, probably hydrogen peroxide. No image is formed by sprayed latex, fine Para, anode rubber, or guayule after being milled or exposed to the light.

The order of the intensity of the images formed by smoked sheets, pale crepe, and sprayed latex is the same as the order of their rate of change of plasticity on milling. Cold-milling is more effective than hot-milling, both in the formation of the peroxide and the breakdown of the rubber. Milling on a cold mill produces a luminous discharge from the blanket to the bank, but this disappears when the rolls are heated.

Sprayed latex and fine Para contain some material which decomposes hydrogen peroxide. This accounts for the fact that peroxides could not be detected in these rubbers, either after exposure to light or after milling, even with the addition of hydrogen peroxide. Both copper and cobalt soaps decompose the peroxide in some instances, though under other conditions the cobalt soaps greatly increase the amount of peroxide in the rubber.

A chemical reaction between rubber, (activated through the mechanical deformation) and oxygen (activated by electrical charges) is advanced as a theory to account for the formation of peroxides and for most of the breakdown of rubber during milling.

The theory is supported by the peroxide tests, by the luminescence effects on milling, and by the fact that the mechanical working of rubber produces, at the very most, only a small change in plasticity if the rubber is worked in the absence of oxygen.

¹ *Ind. Eng. Chem.*, Feb., 1932, 140-46. Presented before the Division of Rubber Chemistry at the 82nd Meeting of the A. C. S., Buffalo, N. Y., Aug. 31 to Sept. 4, 1931.

² The B. F. Goodrich Co., Akron, O.

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Latex Applications

Synthetic Rubber Latex

THE water dispersion of the crude rubber of commerce produces in a sense artificial latex, but it is entirely distinct from the patented¹ products of latex character from which synthetic rubber can be separated by coagulation.

This invention is from the laboratories of one of the leading chemical works in Germany, famed for its development of processes to produce synthetic rubber. The process is outlined as follows:

Diolfines such as butadiene are advantageously converted into products of latex character by emulsifying the initial materials in water with soaplike emulsifying agents such as sulphonic acids or their salts, oleates, etc., then polymerizing the emulsified products. The polymerization is accelerated and premature coagulation of the emulsion prevented by conducting the operation in the presence of buffer systems with a fixed hydrogen-ion concentration. A suitable concentration is between pH-4 and 8.5. This is obtained, for example, by the addition of acetic acid and sodium acetate or of secondary and tertiary sodium phosphate.

The polymerization may be effected not only by heat treatment but also by the exposure to light of short wave length, and by the action of special polymerizing agents, or by the simultaneous employment of the several methods.

Of many examples for operating this process one only will be cited.

100 parts of isoprene are emulsified in 400

parts of water, with the addition of 10 parts of ammonium oleate, 3 parts of tertiary sodium phosphate, and 2 parts of secondary sodium phosphate in a so-called turbo mixer or apparatus with a similar action. The emulsion is then warmed at from 60 to 80° C. in a pressure apparatus for 3 weeks. At the end of that period the greater part of the isoprene will have been polymerized and a product of latex character formed. The rubber is now coagulated from this artificial latex by adding acids, such as acetic acid, hydrochloric acid, and the like or also by the addition of acid buffer systems with a hydrogen-ion concentration of pH about 3 to 4. The resulting artificial rubber can be treated by rolling, drying, vulcanizing, and other rubber manufacturing processes.

Curved Separators for Storage Batteries

IN AN earlier patent issued to Metall-dorf, obtained a patent for a process of making rubber separators for electrical accumulators, in which coagulated latex was used. At the time the attempt was made to give these separators a permanent undulatory form as in separators made of the usual perforated, solid hard rubber, but this failed. A recent addition to this patent now shows that the inventor takes sheets of coagulated latex jelly, prevulcanizes them without pressure, preventing the evaporation of water, and then places the sheets in suitable molds for final cure; the giving off of water again is prevented. This method prevents the crushing of the sheet

and the expressing of the water from its pores and insures the production of a separator of high porosity which at the same time has a corrugated shape that remains permanent.

Improving Latex

IN AN earlier patent issued to Metallgesellschaft A. G., Frankfurt, Germany, gall and substances containing gall had been added to latex and latex concentrates to improve them. It has since been found that it is not necessary to use all the components of gall, but that it suffices to employ the salts from its acid, as sodium cholate, sodium desoxycholate, sodium dehydrocholate, and combinations of these. These salts are preferable because they can be accurately measured, last better, and their action can be regulated by the choice of various combinations. Furthermore, products from latex to which these salts have been added are said to have superior properties.

Latex combined with sodium cholate and in certain cases benzene, etc., can be formed into a paste that can be pressed into various rubber objects. The covering power of colors made of latex and pigments, for instance such as contain ZnO, is considerably increased by adding these salts. If fabrics that are to be impregnated with latex are first moistened with a dilute aqueous solution of these salts, the latex penetrates quicker and better and the fabric is more completely closed than when latex or latex concentrates alone are used for impregnation.

Tire Treads Direct from Latex

THE apparatus indicated in the accompanying diagram is employed for the production of tire treads in continuous strips according to a recent patent covering both the apparatus and method.¹ The arrangement of the apparatus is as follows:

The closed container *A* is provided with a pipe *B* for introducing the latex. The tank is also provided with a pipe *C* through which air is admitted to apply pressure for forcing the latex from the tank. On one side of the tank is a plate or die having a series of narrow, horizontal slots through which thin flat strips or sheets of latex *D* are extruded.

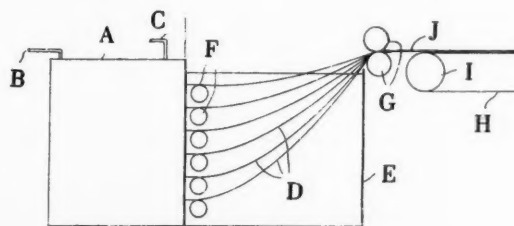
For making pneumatic tire tread plies the slots are graduated in length to impart the contour

characteristic of tire tread plies to the stock. The slots are so placed as to discharge the strips directly into tank *E*, containing a suitable latex coagulant. The thin strips of rubber thus formed are passed over a series of supporting rollers *F* so placed in the tank as partially to support the weight of the freshly coagulated

rubber. A pair of presser rolls *G* located near the upper forward edge of tank *E* receives the strips from the rollers *F* and delivers them as a single laminated tread strip *J* to the conveyer *H*, operating over pulley *I*.

By employing this invention the usual steps of plasticizing and compounding the rubber in a solid state are entirely eliminated. As a result, the rubber is not broken down; therefore it retains substantially all of the tensile strength, elasticity, and durability inherent in rubber which has not been milled.

The method is adapted for the manufacture of any relatively long strips of rubber material where the articles are of such thickness that they cannot be formed directly from latex by ordinary methods of coagulation.



Forming Tire Treads from Latex

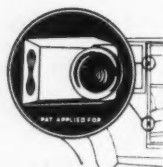
¹U. S. Patent No. 1,866,820, July 12, 1932.

¹U. S. Patent No. 1,864,078, June 21, 1932.

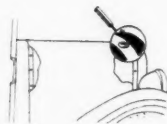
New Goods and Specialties



Gear Shift Cover



Door Silencer



Josco "Snap" Button



Winda-Tyte



Little Atlas Nu-Matic

Rubber for Your Car

THE use of rubber accessories, no matter how small, on an automobile constantly gains favor. New devices therefore, are always being put on the market. Five such products, from the Jorgensen Specialty Co., Hampton Rd., Erie, Pa., are here illustrated and described.

The first is a gear shift cover designed to protect your shoes and other wearing apparel from oil and grease working up through the transmission and gear shift lever. The cover is of soft, pliable rubber, cap shaped, which can be installed in about a minute. Unscrew the lever ball, slip the cover down the lever into place, and replace the ball.

A new type of door silencer with vacuum cup and air cushion actions to stop door rattles and prevent broken windows is offered in 7 sizes for leading makes of closed cars. The vacuum cup on the side of the silencer grips the door tightly, preventing motion; while the air cushion holes at one end check the door, when closing, and hold it firmly when closed. These silencers are molded from non-blooming black rubber, tough but resilient; the quality of which is said to insure long life and positive action. In installing these silencers remove the plain bumpers now on the car from their metal retainers and insert Jorgensens in their place. The vacuum cup and the air cushion holes should be exposed so that they come in contact with the door when it is closed. If the door is not a perfect fit, cut a small piece from the plain end of the silencer, if necessary. As a rule each door takes 2 silencers, but some coupe doors require 3. These accessories are packed 8 in an attractive box.

To prevent window rattling on your car the company has created the Winda-Tytes, which are installed instantly without the need of nails or screws. These curved springs are easily installed. Lower the windows of the automobile and insert Winda-Tytes between the felt or the rubber channels, one or more at either side of the glass, depending on conditions. If the channel is badly worn, insert these springs opposite each other; otherwise stagger them. In all cases they should face each other with their curves turning outward.

Instead of lacing the hood of your car

it is suggested that you button it up with Josco "Snap" Buttons, which will fit any car and eliminate all squeaks and rattles in the hood. They, too, are easily installed. With your thumb or the blunt end of a pencil press firmly on the vacuum end of the button, forcing it into the hole. Continue the pressure until the end of the button has had a chance to work through properly and return to normal shape. If your car is not fitted for lacing, drill 5/16-inch holes at intervals of 3 to 4 inches and use No. 2 buttons. "Snap" Buttons are made in 3 sizes: No. 1 for oblong 3/16- or 5/16-inch round holes, No. 2 for oblong 5/16- or 11/32-inch round holes, and No. 3 for oblong 3/8- or 7/16-inch round holes. From 2 to 4 dozen are required for a car. In replacement only those buttons showing wear need be renewed, saving great expense and labor.

Little Atlas Nu-matic Cushions may also be put on the doors of your car. As may be expected, however, this device is not confined strictly to use on automobiles. Indeed, to eliminate jarring and marring, wherever shock, jolt, or vibration occurs, this cushion may be utilized, in the home, in the office, on machines, on motors, etc. To install it drill a 1/2-inch hole to fit the expansion column; then insert the Little Atlas. Between the cushion and the material of the device to which it is applied thus is formed a compressed air chamber. The long hollow core in the cushion increases airtightness by expansion under added weight; while the live rubber funnel lip presses firmly against the walls of the pit. The funnel lip compressed air chamber increases the pressure of the lip against the wall, adding resilient compression volume. The pressure expansion

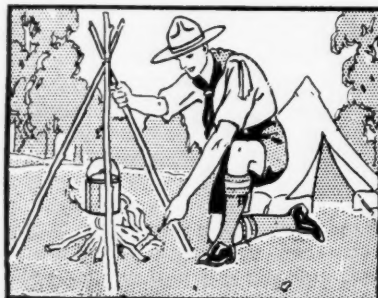
column, moreover, insures proper alignment-firmness. The base saucer lip, which sets on the face of the leg, takes up every tiny shock. Its construction also creates another air chamber of partial airtightness to increase the efficiency of the cushion as weight is added. The live rubber tread, of ample floor area and depth and full of alert springiness, eliminates noise and will not mar the finest floor.

Rubber for Fire Lighting

CAMPERS need no longer fear the coming of bad weather with the resultant uncertainty of obtaining the requisite dry twigs for starting a fire. Constant experimentation with rubber in order to find new uses for this invaluable commodity has led to the origination of a practical means for lighting fires through the use of rubber. In contrast with the old method of gathering a supply of kindling wood, all that is needed are a few strips of crude rubber. So practical is the new process that even the least skilled in fire lighting are guaranteed some measure of success.

Unlike compounded vulcanized rubber, crude rubber in burning will not give off the acrid odor associated with the former. Since it has a heat or calorific value greater than wood, peat, coal, or oil, it is much more economical; it is possible, to light from 8 to a dozen fires with but one pound of rubber. Its cleanliness and compactness and the fact that it will not deteriorate through dampness are other advantages which have led to its widespread use in London.

An expedient method for lighting fires with rubber is first to place a layer of coal or cinders in the grate and over that a layer of crumpled newspaper. The crude rubber which is placed on top is ignited, and, when it is burning brightly, small lumps of coal are added in and around the flames without smothering the blazing rubber. For an out-of-doors fire on a rainy day 2 or 3 strips of rubber are sufficient to kindle the damp twigs. It is possible, however, to boil a small kettle of water merely through the use of about 3 ounces of crude rubber as fuel. Firerub, 71 Eastcheap, London, E. C. 3, England.



Invaluable for Outdoor Use

New Machines and Appliances

Hydraulic Platen Presses

A LINE of 6, 30 by 30-inch all-steel hydraulic platen presses was recently installed in an Akron rubber plant. These presses are of extra heavy construction with 18-inch rams. The platens are of rolled steel drilled from solid stock. The presses are constructed entirely of steel with the exception of the rams which are of close-grain, chilled cast iron, turned and polished. The crosshead, cylinder, ram table, and packer gland are made from high grade electric cast steel. The strain rods are of special alloy steel testing not less than 90,000 pounds per square inch tensile strength.

These presses are designed for modern production involving high pressures and heavy strains on the equipment. National-Erie Corp., Erie, Pa.

Flipper Feeding Machine

IN ORDER properly to flip or cover a tire bead with fabric for its attachment in tire construction the fabric must be fed to the machine without any tension whatever. It seems that operatives from force of habit invariably apply more or less tension by holding back on the fabric as they apply it in the bead flipping operation.

The machine shown at the left in the illustration was designed so that the operative would have no chance to apply tension on the fabric. This device pulls the fabric out of its liner and keeps a loop ahead of the flipping machine at the point of application of the flipper to bead.

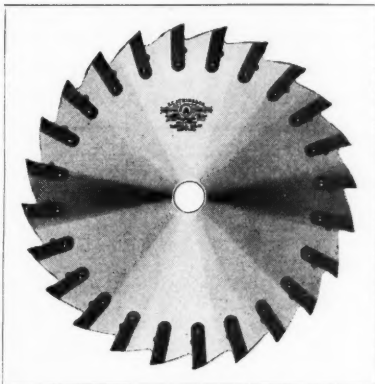
The method of combining feeder and flipper machines, as pictured, briefly follows. The roll of flipper fabric in its

liner revolves in contact with an unwinding pulley near the base of the feeding machine. The liner winds up on the next pulley where the flipper fabric is stripped from the liner and passes up over the idler at the top of the machine standard. From that point it passes downward and returns to a second pulley on the top bracket of the machine over which it descends to the flipping machine where it is applied without tension, to a tire bead.

The feeding machine is operated by a $\frac{1}{4}$ h.p. motor, and the feed is controlled by a triangular tilt-arm and a switch. Utility Mfg. Co., Cudahy, Wis.

Carbide-Tipped Saw

THE saw here pictured has tungsten tipped teeth to adapt it for cutting all types of asbestos compositions, hard



Saw for Composition Products

woods, insulating materials, hard rubber, bakelite, linoleum, and other fibers that contain glues or other gritty substances which quickly dull the teeth of the usual saw.

The saw is made with several styles of teeth, adapted to specific materials. It takes a feed of 50 ft. per min. and operates at speeds ranging from 5,400 to 10,000 ft. per min., depending upon the materials and the machines. E. C. Atkins & Co., Indianapolis, Ind.

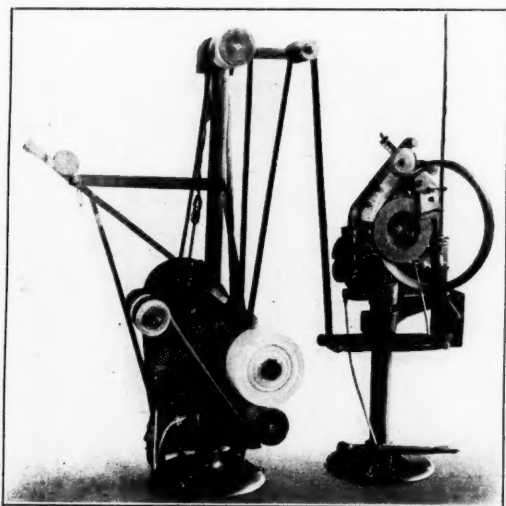
Testing Sieve Shaker

THE fundamental idea in the design of the machine here shown was to devise a shaker that would put through any given testing sieve or sieves, in a definite and shorter time interval, all the material that would eventually pass.

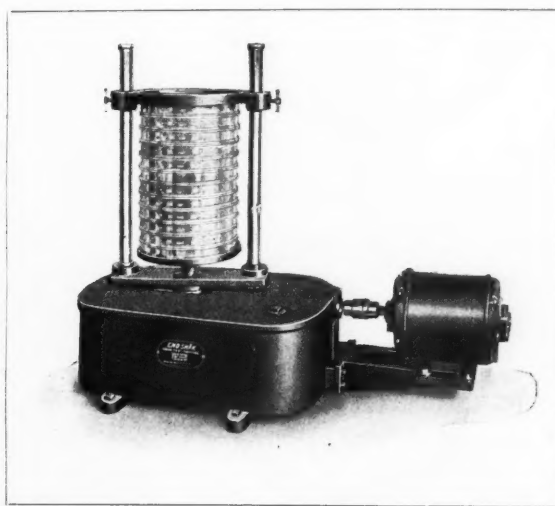
The device is constructed to duplicate the desirable features of hand sieving. The principal and outstanding features may be summarized thus: Most of the variable factors in sieve testing are eliminated. Laboratory and plant results are brought into closer relationship by applying fundamentally sound principles of screening.

The sample is spread uniformly over the entire surface of the sieve. The full sieve area is constantly utilized by a novel combination of reciprocating and slowly revolving movements that eliminate jumping and bouncing of the particles being sieved out. Noise and wear and tear on parts are minimized.

The mechanical action is smooth and easy with a standard $\frac{1}{4}$ -h.p., 110 and 220 volt, 60 cycle A.C. motor, 1,750 r.p.m. A standard automatic time switch controls the period of the test.



Utility Flipper Feeder



Newark "End-Shak"

This shaking device is designed for 8-inch diameter testing sieves, and is adjustable to hold any number of sieves from 1 to 13 inclusive. Newark Wire Cloth Co., 350-364 Verona Ave., Newark, N. J.

Improved Head for Hose Covering

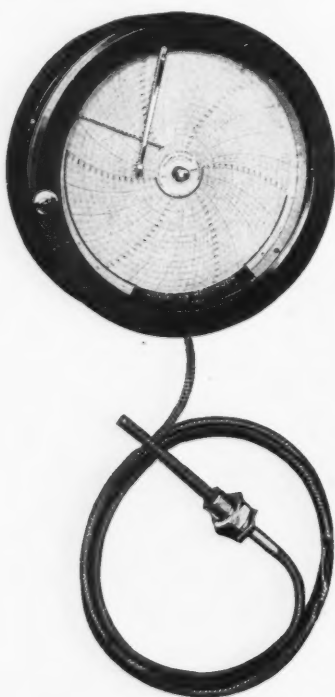
THE application of rubber covering hose by the tubing machine is greatly facilitated by the improved head represented in the picture. Quick opening and ease of cleaning are important special features of this attachment. The die supporting section is hinged to the section attached to the tubing machine cylinder. This section is held in operating position by 2 bolts. Circulation of steam is provided for by hose connections which allow the hinged section to be swung back for cleaning without disturbing the hose connections, as shown in the illustration. The die head is a steel casting.

The maximum present record of this improved head is applying cover to hose at the rate of 300 feet per minute. This is one of many types of heads used for covering and insulating work. John Royle & Sons, Paterson, N. J.

Industrial Recording Thermometer

RECORDING thermometers are indispensable for checking many industrial processes, and they are particularly important in press curing rubber products.

The picture represents a mercury actuated recording thermometer built with a



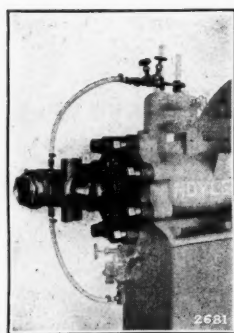
Type 3300 Thermometer

system of steel from the bulb to the spiral spring which actuates the movement. All joints are welded and not soldered. Mercury in the bulb expands or contracts upon temperature changes. These changes in temperature, however slight, are transmitted through fine capillary tubing to the coiled spring and movement by means of a connecting link. Since the whole system is filled with mercury under pressure, there is no time lag, and any variation in temperature of the mercury in the bulb consequently is instantly recorded on the chart.

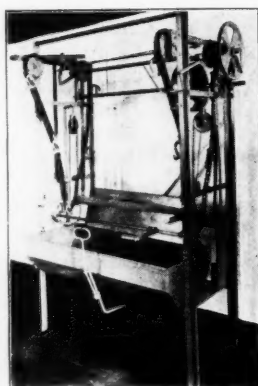
The expansion of mercury, due to changes in temperature, is uniform. This point means that the chart graduations are equally spaced and the accuracy and sensitivity are the same at any point on the chart.

The bore of the connecting tube is so fine that the effect of any change in temperature surrounding the tubing is negligible. This means that a mercury actuated recording thermometer may be used with connecting tubing up to 80 feet with practically no line error. If very long lines are required, up to 200 feet, a recorder actuated by gas or vapor tension must be used; otherwise a mercury instrument is always recommended.

A patented time punch attachment makes this recording thermometer into a watchman's clock. A simple button mounted on the side of the case punches a hole in the recorder chart to register the time of inspection. Consequently the instrument



Royle Quick Opening Head



Wall's Varnishing Machine

supplies a double check. A telechron electric clock is used if required in place of the usual spring wound clock. Consolidated Ashcroft Hancock Co., Inc., Bridgeport, Conn.

Rubber Shoe Varnishing Machine

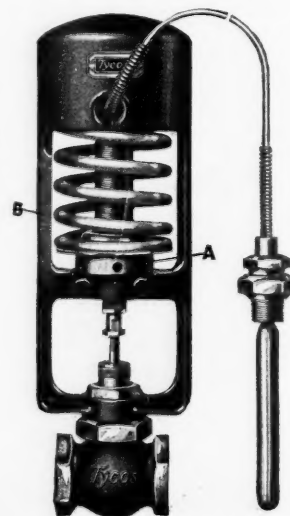
VARNISHING rubber shoes by hand was superseded many years ago by machine dipping. The original design of the shoe varnishing machine has undergone modifications and improvements, finally resulting in the mechanism pictured in the accompanying illustration.

This machine is standard equipment in all rubber shoe factories in the United States and Canada. It is equipped with an automatic bar lifting attachment. The outstanding features of the device are mass production and uniform performance of quality work.

The machine handles a stick of shoes at a time, dipping and raising them from the supply of varnish contained in the tank by means of the double system of sprocket chains. John H. Wall, 41 Constitution St., Bristol, R. I.

Self-Acting Temperature Regulator

THE high degree of sensitivity claimed for the self-acting temperature regulator here pictured is due to the practical elimination of friction. In this instrument the movements of the control valve follow temperature changes at the bulb so closely that true throttling control is obtained. The new controller is recommended for use in plating tanks, hot water circulating systems, drying rooms, and similar applications. It, therefore, should be of interest in rubber plants in one or more of these connections. Taylor Instrument Cos., Rochester, N. Y.



Taylor Temperature Controller

Rubber Industry in America

OHIO

Presenting Bill O'Neil

One of Fortune's favorites, touched by Success, but unspoiled, Bill O'Neil is a shrewd business executive, yet "regular." He is "William" only on company letter-heads that he signs "W. O'Neil." His middle name, shared also by his 3 brothers, is Francis, which he never uses. To his business associates he is "W. O." but his pals call him "Bill."

He's always smoking a pipe. He ties his own bow ties. Bill's Irish—and how! And such a sense of humor! Of commanding stature is he; hair fast thinning; eyes blue and bold, relieved by his frequent and infectious grin. Soft is his voice, yet positive. That square determined chin, too, means but one thing.

His birthday is August 21, 1885; his birthplace Akron, O. After graduating from St. Vincent's High School there, Bill went to Holy Cross College, Worcester, Mass., where he played football and received his A.B. in 1907.

In those days Bill's Dad, the late Michael O'Neil, ran the leading department store in Akron. He did a tremendous business in duck cloth for bicycles until the cotton mills, learning of this profitable trade, eliminated the department store by selling direct to the consumer. Michael O'Neil then determined to operate his own mills in Worcester.

During his undergraduate days in his leisure Bill kept books in his father's factory, Worcester Tire Fabric Co., which was very successful. Shortly after commencement the mills were sold; so Bill returned to Akron as merchandise manager of Dad's store.

A year later the family M.D. advised Bill to "Go West, young man" for his health. Bill did—for a while. On his way home, meeting a tire dealer who interested him in the business, Bill secured a dealership in Kansas City, Mo. But before his parents or their doctor would approve, he had to consult his physician in Denver.

Said that medico, "You'll be dead within 6 months if you try to live in the Kansas City climate."

Bill wired his mother, "Doctor says okeh."

Thus in 1909 O'Neil with \$2,000, W. E. Fouse, now vice president of the General Tire & Rubber Co., with a similar amount, and another man started the Western Tire & Rubber Co., in which O'Neil conceived many of the ideas so profitably used in the General organization.

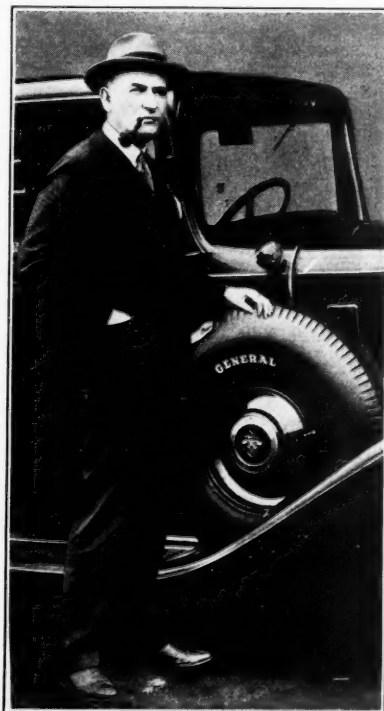
In 1913 he began a small tire accessory factory in the back of the store. The business soon expanded. By 1914, as the nation's largest tire accessory manufacturer, its sales volume totaled \$500,000.

But O'Neil wanted to build tires. Tak-

ing the \$60,000 he made in Kansas City and assisted by his friends, in 1915 he organized the General Tire & Rubber Co. in Akron with a capitalization of \$200,000, to concentrate on the tire replacement business, selling to one exclusive dealer in every city, a policy contributing considerably to the success of the company.

Its first year General earned a net profit of \$80. Salaries were reasonable; the president and general manager, O'Neil, received only \$300 a month. The year before he and Mr. Fouse had realized a net profit of \$30,000. They were pleased though, for theirs was the only tire and rubber concern to have so good a showing the initial year. Today the company boasts an annual sales volume of about \$20,000,000 and has no funded indebtedness.

For 5 years our hero was president of The Ohio State Bank, retiring January 1, 1925, to become chairman of the board. He was also very active in the Rubber Association of America, now the Rubber Manufacturers Association, of which he is still a director. Mr. O'Neil serves, too, on the directorates of St. Thomas Hospital Assn., First-Central Trust Co., and Bankers' Guarantee Title & Trust Co.



Bill O'Neil and That Pipe

He belongs to the Elks, Rotary Club, Akron and United States Chambers of Commerce, Society of New York City, and Lotus, University, Akron City, Silver Lake, and Portage Country clubs.

A happy home is the O'Neils' at 1290 W. Exchange St., Akron, consisting of Bill, his wife, their daughter, and their 5 sons. With them, his well-thumbed books or his fishing tackle, and his pipe, Bill is at peace with the world.

Defiance Vulcanizing Works, Defiance, also handles tires, tubes, tubing, and hose.

Cuyahoga Tire & Rubber Co., 2493 E. 37th St., Cleveland, retreads tires. J. A. Fried is president, and Sam Newmark secretary.

Harvey S. Firestone, Sr., chairman of the board, Firestone Tire & Rubber Co., Akron, recently returned from a trip abroad accompanied by Mr. and Mrs. Russell Firestone. While in Spain the senior Mr. Firestone conferred with prominent business men there and organized the Firestone Hispania Rubber Co., Bilbao, which will employ about 500 men manufacturing tires. On September 14, Mr. Firestone witnessed the wedding of one of his sons, Leonard K., and Miss Polly Curtis in New York, N. Y.

Goodyear Tire & Rubber Co., Akron, from October 1 to February 1, 1933, places all employees on a 5-day week with wage adjustments ranging from reductions of nothing for lower salaried employees to 10% for higher salaried executives. Amid elaborate ceremonies attended by President P. W. Litchfield, Goodyear's 200,000,000th tire was built on September 12. Vice President and Sales Manager Robert S. Wilson recently completed 20 years of service with Goodyear in recognition of which President Litchfield presented him with a silver service pin. Vice President Fred M. Harpham was appointed chairman of the fourth area group in the Cleveland federal reserve district of the industrial rehabilitation committee organized by Randolph Eide, of Cleveland, appointed by General Chairman A. W. Robertson, chairman of the board of the Westinghouse Electric Co., who had been named by President Hoover in an attempt to relieve unemployment. President Litchfield, who favors the 6-hour day as a solution of the problem, recently returned from Washington, D. C., where he attended a committee conference of the United States Chamber of Commerce to study the problem of working hours in American industry.

Goodrich - Hood

James D. Tew, president of The B. F. Goodrich Co., Akron, has announced that the principal executives of Hood Rubber Co., Inc., headed by Arthur B. Newhall, vice president and general manager for several years, have purchased control of the common stock of that company from the Goodrich company. In August, 1929, Goodrich acquired the entire common stock of the Hood company through exchange of Goodrich stock for stock of the former Hood Rubber Co. The capital structure of Hood Rubber Co., Inc., now has been changed so that the investment of the Goodrich company is now represented by 120,000 shares of Hood preferred stock and a minority of the common stock, which has the voting power. At any time after January 1, 1937, the preferred stock is convertible into common, share for share, and voting rights accrue on the preferred stock after that date upon failure to pay preferred dividends which are cumulative, at the rate of \$6.00 per share per annum.

The new Hood directorate consists of Arthur B. Newhall, Alden C. Brett, Raymond H. Blanchard, James D. Tew, and Shelby M. Jett. Officers are Mr. Newhall, president; Mr. Blanchard, vice president; Mr. Brett, secretary; and Carroll P. Griffith, treasurer.

Arrangements have been made between The B. F. Goodrich Footwear Corp., a subsidiary of The B. F. Goodrich Co., under which the Hood company will continue to manufacture Goodrich branded footwear for distribution to the trade through The B. F. Goodrich Footwear Corp.

This purchase of the common stock control of Hood from Goodrich does not affect the Hood Tire Corp., Akron, according to its vice president, H. E. Keller, who declared, "Hood Rubber Co., Inc., has in no way had any control over or capital stock interest in Hood Tire Corp. since this company's organization in April, 1930. The change which has taken place has no bearing of any kind on the manufacture and sale of Hood tires."

William Sewall, formerly advertising manager for the Hood and Miller tire divisions of the Goodrich company, has been named sales promotion manager for the combined affiliated tire sales divisions, it was announced recently by H. E. Keller, manager of Goodrich associated tire lines. Mr. Sewall was tire division advertising manager for the Hood Rubber Co., Watertown, Mass., before joining the Goodrich organization in 1929. He is succeeded by M. G. Huntington, who will direct advertising for the Miller, Hood, Brunswick, and Diamond tire divisions with K. E. Hopkins as assistant advertising manager. Mr. Huntington formerly handled advertising for Brunswick and Diamond tires, and Mr. Hopkins was assistant advertising manager for the Hood and Miller lines.

Frank E. Titus, sales manager of Pacific division of the Goodrich company, Los Angeles, Calif., recently completed 25 years' service with the organization and is being honored with a sales contest arranged for by the Pacific Coast division.



H. P. Schultz

Tire Prices Raised

Last month outstanding tire manufacturers as well as leading mail order houses increased prices on tires and tubes from 11 to 15%. This move was anticipated in June when the federal tax on tires and tubes went into effect, but conditions then did not seem to favor higher prices. Now, however, with the prices of raw commodities including rubber and cotton at a higher level, manufacturers find the increase imperative. The new prices also pass the government tax, formerly absorbed by the manufacturer, on to the ultimate consumer. Among the firms which have announced the advance in prices are Dayton Rubber Mfg. Co., Firestone Tire & Rubber Co., The B. F. Goodrich Co., Goodyear Tire & Rubber Co., India Tire & Rubber Co., Montgomery Ward & Co., Murray Rubber Co., Pennsylvania Rubber Co., which led the move, Sears, Roebuck & Co., and United States Rubber Co.

The Black Rock Mfg. Co., Bridgeport, Conn., announced the change of address of its Ohio and western Pennsylvania representative, C. O. Konrad, to 433 Perkins St., Akron, O.



V. H. Dingmon

Manager Mechanical Sales

His last promotion, to manager of mechanical sales with supervision of the Advertising Department of The Republic Rubber Co., Youngstown, O., marked another step in the ladder of success deservedly won by H. P. Schultz, who has been with the Republic company since April 1, 1922, when he joined as superintendent of the Belting and Packing Departments. The next year, however, he was appointed manager of the Planning Department. In October, 1925, he was transferred to Original Equipment Sales and did so well that on November 1, 1929, he was made traveling sales manager. He was advanced to his present post on August 3, 1931.

Mr. Schultz was born in Portage County, O., on July 24, 1898. He attended Ohio Wesleyan and Western Reserve universities. Before coming to Republic he served The Goodyear Tire & Rubber Co., Production Control, from 1918 to 1922.

This enterprising young executive may be reached at 1717 Ford Ave., Youngstown.

American Tire Alliance, Inc., First Central Bank Bldg., Akron, a buying and merchandising organization of independent tire dealers, recently was formed to purchase and distribute most of the major items stocked by such dealers and service station owners. Harry L. Post, for several years with the Seiberling Rubber Co., Akron, as assistant sales manager, vice president, and assistant to the president, head of the new group, declares:

"The plan . . . does not require the dealer to drop any line of merchandise he may now be carrying. He loses nothing and gains tremendously through participation with many other independents in cooperative merchandising and in organization to resist the competition of mail order houses."

Xylos Official

His pronounced business acumen has won for Vere Henry Dingmon many promotions culminating in his appointment as vice president and general manager of the Xylos Rubber Co., Akron, O., a position which he has held most capably since 1927.

His birthplace is Portland, Ore.; his birthday, December 15, 1890. He attended the elementary and high schools of Coldwater and the Ferris Institute, Big Rapids, both in Mich. In June, 1909, he was graduated after having majored in a business administration course.

That same year he became accountant for Fairbanks, Morse & Co., Chicago, Ill. When he left that organization in 1914, it was to serve as auditor and assistant manager of the Detroit Electric Car Co., Detroit, Mich. Five years later he signed up as auditor and logging supervisor of the Warren-Lamb Lumber Co., Rapid City, S. Dak. Then he joined the auditing staff of the Firestone Tire & Rubber Co. in 1925, and after 2 years of most efficient service there he won his present post.

Mr. Dingmon may be reached at 189 N. Portage Path, Akron.

NEW ENGLAND

I. T. Gurman, consulting chemical engineer and golf ball specialist, formerly at 64 Faulkner St., Malden, Mass., has moved to 1 Wyeth St., in the same city. Telephone: Malden 1878-R.

Carr Mfg. Co. leased a new plant, Buttonwood and Franklin Sts., Bristol, R. I., for which a dedication ceremony took place on Labor Day. Among the speakers were Lieutenant Governor James G. Connolly, who is Carr counsel, and Maurice C. Smith, Jr., former factory manager of the National India Rubber Co. Arthur H. Carr is president of the new concern. Operation of the new plant where 30 to 40 hands will be employed at first has already been started by the Carr company, which will manufacture rubber thread.

Phillips-Baker Rubber Co., 44 Warren St., Providence, R. I., with additions and alterations practically completed, is now working to better advantage in manufacturing footwear. The additional room provides better facilities and increases the floor area in the factory where about 650 persons are employed. Labor-saving devices are everywhere. Much of the machinery in use is especially designed and calculated for production with the least expenditure of time or force. This factory can produce from 12,000 to 18,000 pairs daily.

United States Rubber Co., Lastex Division, Valley St., Providence, R. I., ran 24 hours a day up to within a short time, supplying its specially made rubber thread. At present there is a slight seasonal lull, but when the new garment manufacturing season begins, Charles W. Rehore, manager of the division anticipates that in a few weeks the section will be on a full time schedule again using over 600 employees.

The Columbia Narrow Fabric Co., recently installed a new water wheel and turbine at its plant at Shannock at a cost of \$15,000. The company is using a combination with rubber for a new fabric used in making dresses, hats, and handbags.

Eastern Finishing Works transferred its printing and solvent waterproofing departments from Kenyon, R. I., to the Huntsville, Ala., plant of the Southeastern Finishing Co., an affiliated concern. Charles J. Edmonds, former superintendent at the Kenyon plant, has taken charge of the Alabama plant. The remaining departments at the Rhode Island mill will continue to operate as orders permit, according to Vice President W. H. Adams.

Stowe-Woodward, Inc., Newton Upper Falls, Mass., appointed Wood, Putnam & Wood, Boston, Mass., to handle the advertising of its new golf ball, Paintless Dorchester.

Balloon-Tred Co., Beverly, Mass., distributor of Balloon-Tred rubber heels, appointed Dowd & Ostreicher, Inc., Boston, Mass., its advertising agent.

Bafco Raincoat Co., 69 Portland St., Boston, Mass., is a sales organization of the Old Colony Mfg. Co., a subsidiary of the Aetna Rubber Co., Boston. Branch offices are maintained at 1350 Broadway, New York, N. Y., and 223 W. Jackson Blvd., Chicago, Ill. The company products are raincoats and hats, rubberized jackets and bags, raincoatings, auto top and seat cover materials, headlinings, shoe goods, textiles, and scrap rubber. Bafco officers are Samuel Goldstein, president; E. Goldstein, secretary; A. L. Fistel, treasurer; and Max Levine, purchasing agent.

Lowell Insulated Wire Co., 171 Lincoln St., Lowell, Mass., operating steadily since 1903, is one of the largest producers of insulated flexible cords of all kinds and descriptions in the country. The firm's insulating capacity per 8-hour day is one million feet, and it has nearly 1,000 braiders. The company sells and carries stock all over the nation, maintaining 3 agencies on the Pacific Coast. Lowell is the originator and sole manufacturer of the 3 colored rubber service cords: Lowpar, Lowlay, and Lowcol. R. Dunsford is treasurer of the company.

PACIFIC COAST

Darnell Corp., Ltd., 3517 E. 11th St., Long Beach, Calif., manufactures molded rubber goods, caster tires, and glide rubbers. The company maintains branches at 24 E. 22nd St., New York, N. Y.; 2147 Prospect Ave., Cleveland, O.; 32 N. Clinton St., Chicago, Ill.; and 422 Smith Tower, Seattle, Wash. Company executives include: W. R. Darnell, president; W. Raleigh Darnell, vice president; A. G. McGrath, secretary and purchasing agent; and R. Darnell, treasurer.

Universal Rubber Mfg. Co., 938-958 Harrison St., San Francisco, Calif., according to C. M. Shannon, finds the outlook on future business for the balance of the year very prosperous. While the first 6 months showed a slight decrease in sales volume because of general conditions, July and August welcomed in new business sufficient to maintain the company's regular crew working to full-time capacity. If present conditions prevail, the firm will have to hire additional men to produce the work now on order. As buyers' stocks today are at a very low ebb, purchases made are always in a hurry; consequently the Universal company must maintain a high inventory of mechanical goods to meet the immediate needs of its customers. J. M. Rodgers, affiliated with the rubber industry for the past 2 decades, has joined the Universal sales force.

The Fisk Rubber Co., Chicopee Falls, Mass., reorganization plans have been completed according to a recent announcement by the committee in charge. The receivers, Charles A. Dana and John Pierce, have recommended acceptance of the plan. A cash distribution of \$400 will be given for each \$1,000 bond and \$370 for each \$1,000 note, and it is proposed to form a successor operating company to continue the Fisk business and a real estate company into which will be placed certain mortgaged property not required by the operating company, which will have an authorized capitalization of \$4,000,000 6% preferred stock, cumulative after January 1, 1934, and 400,000 common shares, in addition to such additional stock, not exceeding 300,000 shares, as may be subscribed for by old stockholders. It is also proposed to distribute all the issued preferred stock, together with about 400,000 common shares, to holders of bonds and notes and other creditors. The last represents a small amount. Stockholders will have rights until October 10 to subscribe for about 300,000 common shares for cash at \$2.50 a share.

Harry T. Dunn, Fisk president for nearly 3 decades, until its receivership about 18 months ago, has definitely retired from business. Although the office of president was abolished with the advent of the receivers, Mr. Dunn continued with the company in an effort to straighten out its affairs.

Samuel Cabot, Inc., with factory at Chelsea, and principal office at 141 Milk St., Boston, both in Mass., manufactures lamp black for rubber compounding. Branch offices are at 191 Park Ave., New York, N. Y.; 1619 Real Estate Trust Bldg., Philadelphia, Pa.; 5000 Bloomingdale Ave., Chicago, Ill.; and 827 Second Ave. S., Minneapolis, Minn. Officers include Samuel Cabot, president; March G. Bennett, treasurer; and Arthur E. Mills, purchasing agent.

Reading Rubber Mfg. Co., Reading, Mass., manufactures auto topping and raincoat material of all kinds, quarter lining, refrigerator welt, weather stripping, and truck upholstery material, covered by the following trade names: Chase Drednaut, Chase Wexford, Chase Shuskin, Chase Sportwear and Rainwear. Company officers are Frederick C. Hopewell, president; James Clemens, treasurer; John P. Hach, assistant treasurer; and George W. Abbott, purchasing agent. L. C. Chase & Co., Inc., 295 Fifth Ave., New York, N. Y., is selling agent.

The Armstrong Rubber Co., Inc., manufacturer of automobile tires and tubes, West Haven, Conn., in its effort to educate consumers to buy direct from the factory mails out a catalog giving detailed descriptions and illustrations of its tires and tubes along with an order blank, guarantees, etc.

— EASTERN AND SOUTHERN —

George H. Carnahan, president of Intercontinental Rubber Co. and Continental Rubber Co. of New York, 745 Fifth Ave., New York, N. Y., recently left on an extended visit to the Far East where he will inspect the rubber estates of the Continental Plantation Co., another Intercontinental subsidiary. Mr. Carnahan expects to return to New York soon after the first of the new year.

Rand Rubber Co., Sumner Ave. and Halsey St., Brooklyn, N. Y., through President L. H. Rand reports that it has made considerable additions to its plant, has installed additional equipment, and looks forward to a larger volume of sales. The company recently produced a beautiful line of Randprinted rubber aprons.

R. T. Vanderbilt Co., Inc., 230 Park Ave., New York, N. Y., effective September 1, adopted a 5-day week, being closed on Saturday. Consequently the firm asks the cooperation of all its correspondents in sending mail so that it reaches the Vanderbilt offices not later than Friday.

Pennsylvania Rubber Co., Jeannette, Pa., according to President W. O. Rutherford during the first half of this year earned more than during the whole of 1931.

I. B. Kleintert Rubber Co., 485 Fifth Ave., New York, N. Y., on September 13 recalled 800 former employes to resume work on a full 5-day-week schedule to take care of the increase in orders received.

Glyco Products Co., Inc., Bush Terminal Bldg., No. 5, Brooklyn, N. Y., has appointed Harold W. Feuchter, 332 Bedford Ave., Buffalo, N. Y., sales representative for the Buffalo district.

Weldon Tire Co., Birmingham, Ala., announces the retirement, because of ill health, of its founder, James E. Weldon, as head of the concern. He is succeeded by C. O. Read, formerly with The Fisk Tire Co.

Seiberling Rubber Co., Akron, O., opened a new warehouse at 601 W. 26th St., New York, N. Y. In the same building is the new Seiberling distributor for Manhattan. H. P. Baran and M. Jacobson, doing business as Air Cooled Tire Co.

The Holtite Mfg. Co., manufacturer of rubber heels, Warner and Ostend Sts., Baltimore, Md., through President Morris Eisen reports a definite upturn in business which, it is believed, is here to stay. The company has put all its men on the road, and they are getting good results. Holtite recently added more machinery to its plant. It also improved designs on its heels by adding an extra wear pad on its Commander, Jax, and Holtite products to give double wear. Julius L. Diener is vice president, and Albert A. Esterson secretary-treasurer.

New York Group

The next meeting of the New York Group, Rubber Division, A.C.S., will be held Wednesday evening, October 5, in the club rooms of the Building Trades Employers Association, 2 Park Ave., New York, N. Y.

The program will consist of a paper on "What's This about Balloons" by B. J. Lemon; a travelogue on "A Trip to the Far East in a Rubber Boat" by E. T. Croasdale; and an entertaining paper on "Freak Patents" by a speaker yet to be announced.

The meeting will be preceded by a dinner at 6:30 p.m. Tickets are \$2 each. Reservations should be sent to Peter P. Pinto, secretary, 250 W. 57th St., New York.

Aquarex

Aquarex is a stabilizing and wetting agent developed for use in latex compounding. It is readily soluble in water. It is added in the form of a 10% water solution to latex, pigment pastes, or compounded latex.

Coe Belting, of which M. N. Coe is owner, 211 S. Peters St., New Orleans, La., jobs rubber belting, packing, boots, and hose.

Toukay Bag Co., Inc., 17 W. 20th St., New York, N. Y., recently was incorporated to manufacture ladies' handbags in which a certain amount of rubberized silk is used. Officers are President A. David Klarer, Treasurer Sam Kraus, Vice President R. Kraus, and Secretary B. Klarer.

McClaren Rubber Co., manufacturer of McClaren Autocrat tires, Charlotte, N. C., according to Advertising Manager J. A. MacTaggart is operating on a full-time schedule 24 hours a day, 3, 8-hour shifts, and has reached an all-time peak. Mr. MacTaggart also announces the organization of a new McClaren dealer, Shaw-Horton Tire Co., formed by the merger of the Shaw Tire Co. and the H. D. Horton Co., both of Charlotte. Victor Shaw and H. D. Horton, heads of the former companies bearing their respective names, are well known in the tire merchandising industry, having both been directors in the National Tire Dealers Association. Mr. Shaw will be general manager of the new company, and Mr. Horton president. Archie Campbell, with Mr. Shaw since 1923, will join the sales staff of the new organization to specialize in the sale of tires to commercial establishments in the section.

Bruce Bedford, president of the Luzerne Rubber Co., Trenton, for several weeks with his family has been cruising to Halifax, Nova Scotia, and Bermuda.

— NEW JERSEY —

Rubber manufacturers of New Jersey are very much encouraged by slightly increased business during the past month. Plant owners believe that this condition indicates that late fall and winter business will also show activity. Tire manufacturers announced an increase in prices effective the middle of the month. This news has been welcomed by rubber reclaiming plants and will spur activity there. The hard rubber situation remains unchanged.

Joseph Stokes Rubber Co., Trenton, experienced increased business at both the Trenton and Welland, Ont., Canada, plants.

Dural Rubber Corp., Flemington, has been operating on a double shift the past several weeks. Edgar H. Wilson, former president and general manager, moved to Trenton, where he is assistant manager of an investors' syndicate.

Trenton State Fair. The Essex, Home, and Acme Rubber companies had elaborate exhibits at this recent fair, displaying practically all lines of mechanical rubber goods.

Essex Rubber Co., Trenton, reports very satisfactory business during the past month with indications for good fall and winter trade. Irving Katz has been made southern representative; while Lewis Lent will cover the Midwest. Both will handle Essex soles and heels for the shoe finding trade.

Howard B. Slusser, vice president and treasurer of the Pocono Rubber Cloth Co., Trenton, returned after spending several weeks in California. The company announces a little increase in business.

Charles E. Stokes, Jr., vice president of the Home Rubber Co., Trenton, spent some time with his family at Spring Lake, N. J.

Murray Rubber Co., Trenton, increased tire production last month. This company has followed the large concerns in increasing prices of tires and tubes.

Thermoid Company, Trenton, finds business a little more brisk in all lines. Encouraging reports are also made by its subsidiary, Wooven Steel Hose & Rubber Co., Trenton. The latter's president, Horace B. Tobin, returned with his family after several weeks in Germany and France.

Pierce-Roberts Rubber Co., Trenton, received increased orders for molded goods. President Harry W. Roberts, with a party of friends, returned from a cruise to Lake Champlain and Montreal, Canada.

William H. Sayen, Jr., president of the Mercer Rubber Co., Hamilton Square, was on an extended business trip through the Midwest. The company says the outlook is very encouraging.

Puritan Rubber Co., Trenton, announces that orders for fall trade show a better tone.

MIDWEST

Chicago Rubber Clothing Co., Racine, Wis., through Sales Manager Robert Watt announces a new material for raincoats, Suedetone, an interpretation of a real suede fabric, in 3 shades: brown, reindeer, and tan. The firm deplores the great harm that has been done the raincoat industry through inferior merchandise, but believing that merchants once more are beginning to appreciate quality products, the Chicago company anticipates good demand for the better type of raincoat. This company, of which F. F. Sommers, Jr., is president, aims to turn out quality merchandise which is distinctive as such and at prices which are reasonable and allow the merchant to make a profit and carry him above price competition.

Philip S. Olt, Pekin, Ill., manufactures a complete line of hard rubber game callers for sportsmen.

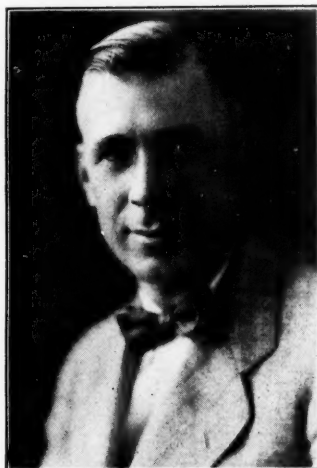
Auburn Rubber Corp., Auburn, Ind., according to Thos. J. McKeon, factory manager and in charge of shoe factory soles, has just finished an exceptionally successful 6 months of business, the largest the company has enjoyed in the past 5 years. Auburn anticipates a very successful winter trade. The company has developed a full line of commodities used by the shoe trade, including cement-applied soles and heels, and soles for sport shoes, besides kneeling pads for the chain store trade. All these commodities are showing an upward trend. A. L. Murray is president and general manager, and D. M. Sellw, superintendent and purchasing agent.

American Society for Testing Materials, 1315 Spruce St., Philadelphia, Pa., according to Secretary-Treasurer C. L. Warwick will hold its 1933 annual meeting at The Stevens, Chicago, Ill., June 26 to 30, during the Century of Progress Exposition.

Bondogen

Bondogen is a new solvent intensifier for use in rubber-gasoline cements and doughs. Additions of from 1 to 3% by volume to gasoline increases the solvent action of the latter on rubber, thus shortening the time of churning the cement. It not only increases the smoothness and uniformity of the cement, but eliminates ropiness, producing easier brushing and spreading. It improves the cohesive strength of cemented unions and has no injurious effect whatever.

Campbell-Adams, Ltd., crude rubber broker, 58 Wellington St. E., Toronto, Canada, is Canadian agency for W. Glur & Co., London, England. Officers are T. P. Adams, president; James N. Graham, vice president; and H. D. Hall, secretary-treasurer.



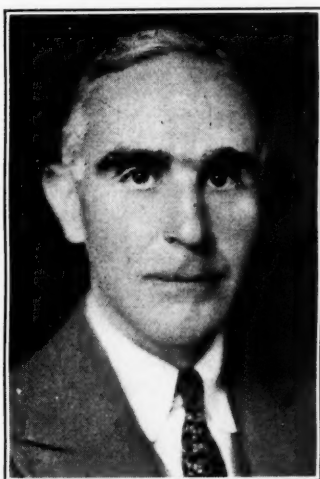
Earl S. Sargeant

General Manager Canadian Goodrich Co.

His business acumen and managerial ability have gained for Earl S. Sargeant many promotions in the Goodrich organization, to which he has devoted his entire business career.

He was born in Chatham, O., on December 1, 1888, the son of William L. and Melvina Sargeant. After graduating from high school the young man later matriculated at Ohio State University, Columbus, which conferred upon him the degree of LL.B. in 1915.

Mr. Sargeant entered the employ of The B. F. Goodrich Rubber Co., Akron, O., on July 1, 1915, in its credit department. From 1926 to 1928 he was the firm's general credit manager; then he was appointed treasurer of the Pacific Goodrich Rubber Co., Los Angeles, Calif. The next year he won his present post, vice



International Press

A. B. Purvis

CANADA

president and general manager, Canadian Goodrich Co., Ltd., 521 King St. W., Kitchener, Ont., Canada, supervising the manufacture and the sale of tires, tubes, footwear, etc.

This prominent executive was elected vice president of the Rubber Association of Canada in April, 1932. Other organizations which are proud to include Mr. Sargeant on their rosters are the Rotary Club, A. F. & A. M., Phi Delta Phi, and Delta Upsilon.

Anglo-Canadian Rubber Co., Ltd., 2311-15 Cambie St., Vancouver, B. C., manufactures surgeons' household, electricians', acid, autopsy, and industrial gloves; tanners' mittens; fingercots, including one- and 2-finger examination cots; toy balloons; drainage tubing; and a general line of dipped goods and novelties. Company officers are: Wm. J. Davidson, president and treasurer; Chas. A. Steele, vice president; and Jno. Morgan, secretary and purchasing agent.

Canadian Dunlop Chief Has Extensive Experience

For one still in young middle age, Arthur Blaikie Purvis, president and director of the Dunlop Tire & Rubber Goods Co. of Canada, Ltd., has had an exceptionally varied and successful commercial career. Born in London, England, March 31, 1890, he was given a sound schooling and prepared for an active business career. His debut in trade was made as a junior with Lynch Bros., London, in 1905. Next he held various positions with Nobel's Explosives Co., Ltd., Glasgow, Scotland, (now Imperial Chemical Industries, Ltd., London, England,) 1910-12, traveling for that company in South America, Africa, and the United States, 1912-24.

Mr. Purvis, in addition to being head of the Dunlop company, is also president and managing director of Canadian Industries, Ltd., manufacturer of commercial explosives, sporting ammunition, artificial leather, paints, varnishes, pyroxylin products, celluloid articles, ammonia, fertilizers, salt, chlorine products, acids, and heavy chemicals; vice president and director of Barclay's Bank (Canada), Ltd.; director of Bell Telephone Co. of Canada, Ltd.; Canadian Safety Fuse Co., Ltd.; Royal Automobile Club of Canada; and of General Motors Corp., New York, N. Y.

He is a member of the St. James, Mount Royal, Mount Stephen, Royal Montreal Golf, Forest & Stream, and Hunt clubs of Montreal; and the New York, Bankers' and Engineers' Country clubs of New York.

He married Miss Margaret Jones, of Jamestown, N. Y., February 14, 1918, has one son, and since January, 1925, has made his home in Montreal, Canada, at 9 Chelsea Pl. His business address is the Canadian Industries, Ltd., Beaver Hall Bldg. in the same city.

OBITUARY

Former Thermoid Officer

FINANCIAL difficulties caused Fred S. Wilson, 55, former vice president and Pacific Coast manager of The Thermoid Company, Trenton, N. J., to commit suicide in his office in Los Angeles, Calif., on September 1.

When 16, in 1893, he joined Thermoid as an apprentice in the bicycle tire department and subsequently became its foreman. After 2 years he joined the sales department, traveling through eastern New York and Pennsylvania. Within a few years he was made advertising and sales manager, which position he held for some time. When the company expanded to include the West, Mr. Wilson took Chicago and the Midwest as his field of operation. After developing successfully that territory for the company, he moved to the Pacific Coast and opened branch after branch for Thermoid.

About 9 years ago the deceased became interested in oil refining and was appointed head of a large Los Angeles refining company. Later he was elected president of the Santa Monica Bay District Realty Board.

Mr. Wilson resided in Santa Monica and for many years was prominently identified with its development, having headed the citizens' committee and was among the leaders of the movement for creating the yacht harbor in Santa Monica Bay. He also was associated with numerous local organizations.

Surviving are his widow, his daughter, 3 brothers, and a sister.

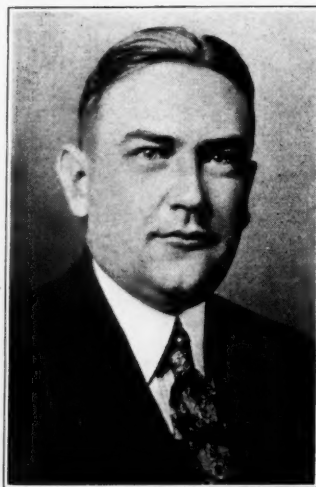
Canadian Rubber Official

A SUDDEN heart attack on September 5, although he appeared in good health, proved fatal to Earl W. BeSaw, president of the Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., Canada, since December 23, 1929. Mr. BeSaw joined the Firestone Tire & Rubber Co., Akron, O., as tire salesman on March 23, 1911. He successively became manager of the Firestone branch, Des Moines, Iowa, western district manager in 1914, assistant general sales manager, and in 1919 general sales manager. When the Canadian plant opened in 1922, he was made vice president.

Mr. BeSaw was born in Akron on August 23, 1886. He later attended Central High School.

He was president of the Burlington Country Club, Hamilton, past president and a director of the Rubber Association of Canada, a director of the Hamilton Chamber of Commerce, and a member of the Rotary, Olympic, and Canadian clubs.

Funeral services were conducted at his Hamilton residence on September 7 after which the body was taken to Akron. Here on September 8 services



Earl W. BeSaw

were held at the High Street Church of Christ, at which an uncle, Rev. W. BeSaw, officiated. A large gathering of friends, relatives, and business associates paid their last respects to their departed one. Burial was in Glendale Cemetery.

Surviving Mr. BeSaw are his mother, his widow, and his twin daughters.

John H. Britton

JOHAN HALL BRITTON, 74, died at McKinley Hospital, Trenton, September 1, after an illness of several weeks. For many years he was paymaster for the Crescent Insulated Wire & Cable Co., Trenton, besides having been its traveling salesman.

He was a member of one of Trenton's oldest families and was active in the Republican party. Mr. Britton belonged to the Elks, Masonic fraternity, Moose, Society of Sons of the Revolution, Commercial Travelers' Association, and the Trenton Chamber of Commerce.

Interment was in Greenwood Cemetery, Trenton. Surviving is his widow.

Former Rubber Executive

DEATH has removed an interesting figure from the ranks of former rubber executives in the person of James Cooper Lawrence, who at the time of his demise was University Dean, University of Minnesota. Dr. Lawrence, who also had been appointed by President Hoover a member of his commission on the study of economic conditions, for 17 years was associated with the rubber industry, 10 as an officer with The B. F. Goodrich Co. and 7 as president of The Racine Tire Co. and The Faultless Rubber Co.

Dean Lawrence is the author of several works including the book, "The World's Struggle with Rubber," which was released last year.

Rubber Technologist

CARLYLE E. BOONE, associated with Michael Levin to develop and perfect practical latex and dispersion problems, 2431 Lakeview Ave., Baltimore, Md., recently died. For the past 2 years he had been in the United States Veterans Hospital, Outwood, Ky.

The deceased was born in Baltimore on February 13, 1895. After graduating from the local public schools he attended Baltimore Polytechnic Institute, receiving his degree in 1913.

From 1913 to 1930 Mr. Boone was with the United States Bureau of Standards, Washington, D. C., except for 2 years during which he saw military service on the Mexican border and in France. He wrote many publications for the Bureau and assisted Dr. David Spence with testing guayule rubber. Mr. Boone also did much specification work.

Cornelius Nolan

CORNELIUS NOLAN, of Morrisville, Pa., for many years a foreman at the plant of the Vulcanized Rubber Co. at that place, died recently in a Philadelphia hospital. He had been with the company since it was organized more than 50 years ago at Butler, N. J.

He is survived by 2 sons and 2 daughters.

George C. Mechlin

GEORGE C. MECHLIN, who died June 5, 1932, was born at Salmas, Persia, June 28, 1888. His father, a Presbyterian minister, returned to the United States with the family in 1895. His education was started in Middleport, N. Y., and completed in Fredericksburg, O.

In 1910 he began his rubber career with The B. F. Goodrich Co., Akron, O. At various times he was connected with the McKone Tire, Millersburg, O.; Syra-Cord Tire, Syracuse, N. Y.; Miller Rubber Products Co., and Seiberling Latex Products, both of Akron; and until his death, Firestone Footwear Co., Hudson, Mass.

Mr. Mechlin was a member of Mt. Akra Lodge, F. & A. M., Akron, and Federated Church, Hudson.

Surviving are his widow, 2 sons, a daughter, 5 sisters, and one brother.

Funeral services were held at his home, 119 Lincoln St., Hudson, June 8. Interment was in Forest Vale Cemetery, Hudson.

Nekal - BX

Nekal-BX is a wetting agent, highly esteemed in the textile trade, that has proved similarly effective as a wetting agent for dry powders in compounding latex. The material is said to be an example of the alkylated naphthalene sulphonic acids, being a condensation product of an aliphatic alcohol in the presence of sulphuric acid.

Rubber Industry in Europe

GREAT BRITAIN

R. G. A. Activities

The Highway Surface Construction Committee recently was appointed by the Technical Research and Development of New Uses Committee of the Rubber Growers' Association to do research on incorporating rubber or latex with tar, bitumen, asphalt, cement, and similar road materials. The Ministry of Transport is cooperating, and the program takes place at the City & Guilds Engineering College, Imperial College of Science and Technology, under Prof. R. G. H. Clements. This work, of course, is entirely separate from the investigations of Rubber Roadways, Ltd., on rubber blocks. The committee includes Sir Herbert Wright, Sir Stanley Bois, Col. T. H. Chapman, Professor Clements, Sir Frank E. Smith, and E. Winfield.

H. P. Stevens, R. G. A. consulting chemist, recently reported on the work done in using rubber in manufacturing linoleum. Experiments were conducted to test the possibility of substituting rubber for the relatively expensive kauri gum in cements and the possibility of reducing the period of treatment by the use of rubber. So far, however, results have not been very encouraging. But since the poor results are thought due to unsuitable conditions of oxidation, it is intended to try varying them and to continue experimentation.

Rubber Floorings

The requirements of an inexpensive rubber floor covering to compete with linoleum explains P. Schidrowitz in an article on the development of known or new applications of rubber are: it must be thin, not more than 2 to 3 mm. thick, of low specific gravity, comparatively rigid yet resilient, and without marked tendency to crack.

His numerous experiments have convinced him that floor coverings answering this description can be produced and the difficulties can be overcome. Thus to obtain a light and comparatively rigid flooring large quantities of light fillers must be used, and their incorporation causes difficulties not only with regard to time and power consumption but also in obtaining a satisfactory mixing. He solved these problems by using a rubber softened by a new method involving a fundamental modification of the ordinary mastication process.

Such softened rubber mixings, he claims, require considerably less time to handle; they remain soft, can be calendered more readily than ordinary mixings, are less liable to scorch when containing powerful accelerators; yet the strength of the rubber returns after vulcanization. Furthermore by a preliminary treatment the

fibrous type of fillers were ground more rapidly and economically than usual, and, finally, to prevent sticking of the press plates in press curing a comparatively simple method, avoiding the use of fabric, was found. At the same time means to simplify and cheapen the vulcanizing process suggested themselves and are now being developed.

Mr. Schidrowitz gives no further details regarding his methods in the article in question, but the processes are patented.

Patent No. 370,578, taken out by P. Schidrowitz, M. W. Philpott, and R. M. Ungar, covers a process for preventing sticking to the mold or press plate. The sheeted or formed mixing is subjected to precurc throughout its mass prior to applying pressure, by exposing the formed rubber in unconfined condition in a hot-air chamber heated to from 150° to 250° F. After vulcanization in a hot press the sheet may be cooled under pressure. For instance, a mix of 120 parts rubber, in part softened by preheating as described in Specification 368,902, 260 parts ground cork, 29 parts carbonate of magnesium, 20 parts zinc oxide, 1 stearic acid, 6 sulphur, and 2½ piperidyl dithiocarbamate of piperidine, is made into sheet, precured in unconfined condition for one hour at 212° F., and subsequently cured in a hot press for 3 minutes.

The Dunlop Railroute

According to *Commercial Motor*, The Dunlop Rubber Co., Ltd., is experimenting in France with a new system, the Dunlop Railroute, by which ordinary pneumatic-tired vehicles may be adapted for operation on road or rail. Normal-pattern tires, without flanges, are used, but the vehicle is kept to the track by small flanged guide wheels, one in front and one behind each ordinary wheel, which are carried on pivoted arms projecting from the axles, the outer ends of each pair being connected longitudinally by an adjustable and sprung tie bar. The flanged wheels are mounted on false hubs so that they can be detached in a few minutes, leaving the vehicle ready for the road. Each vehicle has a kind of combined jack and turn-table secured underneath by which it can be swung around into any position or be lifted onto or off the rails.

Company Notes

A very substantial reduction in rail rates on raw rubber has been granted by the railway companies as a result of negotiations with the Rubber Trades Transport Committee. In addition the rate for waterproof garments and piece goods from Manchester to East Coast ports has been

reduced from 26s. per ton to 20s. for the period July 1, 1932, to December 31, 1932.

An area of 1,200 square yards has been laid in Market St., Huddersfield, with improved Gaisman blocks comprising a vulcanized rubber cap and brick base.

"Topflite," a new golf ball with a paintless cover, has just been put on the market by A. G. Spalding & Bros., (British) Ltd. The ball is pure white from cover to the winding and has been specially surface-hardened to obtain a high polish. The absence of paint, it is claimed, leads to accuracy in design, and since even an infinitesimal variation in design can reduce the length or direction of a drive by 3-5 yards, the importance of the innovation is obvious.

Filastic, Ltd., is a new company recently formed by the Associated Beltings Co., Ltd., with a capital of £100,000 to acquire the patents covering filastic, the new latex-impregnated yarn containing 50% by weight of rubber, invented by J. E. C. Bongrand and L. S. M. Lejeune; further to make agreements with the inventors and R. de Lubersac & Cie., and with Blacking & Co., Ltd.; and finally to carry on the business of cotton spinners and doublers, etc. Under the first agreement the vendors have the right to nominate one-fifth of the directors; Lewis & Tylor, Ltd., and George Banham & Co., Ltd., the joint right to nominate one director as long as they hold 7,500 £1 shares; and R. & J. Dick, Ltd., to nominate one director as long as it holds 7,500 £1 shares.

The *India Rubber Journal* says: "We have lately seen some very fine samples of cement wall finishes in which the surface layer of the cement contains 30% of rubber added as latex to the mixing along with a proportion of aluminum chloride. The effect, it is hoped, will be to prevent the crazing which otherwise occurs in cement finishes."

France

Judging by statistics for 1929, 1930, and 1931, French tire producers are losing ground in their own market to foreign suppliers. Thus France imported about 5,700,000 kgs. of automobile tires in 1931 as compared with 4,300,000 kgs. in 1930 and 2,600,000 kgs. in 1929. Most of this business was obtained by Belgium and Great Britain, which in 1931 sent 3,200,000 and 1,600,000 kgs. respectively.

Footwear imports increased from 539,000 kgs. in 1930 to 780,000 kgs. in 1931, a rise chiefly due to the sudden enormous spurt in shipments from Czechoslovakia, from 10,000 kgs. in 1930 to 200,000 kgs. in 1931. Belgium too sent considerably larger amounts of footwear in that year, 134,000 kgs. instead of 53,000 kgs.

GERMANY

Tire Industry

During the second quarter of 1932 tire factories in the Frankfurt a. M., Hanau, Fulda, Wetzlar, Wiesbaden, and Limburg districts worked 5 days a week, on an average, says the report of the chambers of commerce concerned. The tire industry is being hampered in many ways at present; thus the continuance of this 5-day schedule depends largely on the ability of manufacturers to secure the necessary foreign drafts to cover raw material imports.

Tire selling, on the other hand, in general has been seriously affected by the heavy taxation on automobile transportation and more recently by the tendency of the National Railways to cut out long-distance transportation of goods by motor trucks more and more and to divert this business to the railroads. This attempt of the railroads to monopolize overland traffic is causing much anxiety among those interested in motor transportation, and a petition has already been submitted to the Minister of Transportation protesting against the policy of the railways in granting minimum freight rates where motor vehicles are still bound to maximum rates and demanding the restoration of equal tariffs for motor vehicles and railways.

A direct result of this competition of the railways is that now a minimum of motor trucks for long distance transportation is on the road.

Synthetic Rubber Tires

The I. G. Farbenindustrie A. G., Frankfurt a. M., recently patented a process for making tires from a synthetic rubber produced by the polymerization of mixings of dimethylbutadiene and other butadiene hydrocarbons. Rubber-like products obtained from dimethylbutadiene have considerable nerve and good plasticity, but very little elasticity; while they become hard and brittle at temperatures below 0°. Butadiene and isoprene polymerizates, however, are very elastic and resistant to cold, but possess little nerve or plasticity. It was found that these disadvantages are absent in rubber-like products obtained by warm or emulsion polymerization of mixings of dimethylbutadiene with butadiene hydrocarbons, as butadiene or isoprene or butadiene and isoprene, for example. Such products show all the necessary good qualities for producing high grade tires. These tires are particularly satisfactory when finely divided black, zinc oxide, and the like are added to the polymerizates.

Foreign Tire Trade

Imports and exports of all kinds of tires and tubes declined heavily during the first 6 months of 1932 as compared with the same period of 1931. Thus only 19,052 tires for automobiles were imported against 117,470; and 6,832 tubes instead of 65,415. Of the 248,527 cycle tires entering the country in 1932, no fewer than 244,766 were return goods, making the actual imports for the period 3,761 against 40,199 in 1931. The number of automobile tires

exported was 72,040 against 84,857; of tubes, 48,734 against 61,175; of cycle tubes, 367,818 against 1,314,593.

Other Imports and Exports

Only 132,430 pairs of footwear were imported instead of 223,161. The shares of Sweden and Czechoslovakia notably increased, but shipments from America fell from 74,444 to 26,201 pairs. The difference in exports of footwear, 633,894 pairs against 893,209 pairs, was wholly attributable to the drop in shipments to England which were only 165,071 instead of 367,239 pairs. France, Lithuania, Netherlands, and Switzerland all took more than in 1931.

Imports of mechanical goods are of minor importance. Exports included 1,002 against 1,577 quintals of belting; 5,507 against 7,184 quintals of hose; and 857 against 876 quintals of packing.

Company Notes

The Deutsche Kautschuk Gesellschaft has awarded its plaque to Professor H. Staudinger, of Freiburg, in recognition of his outstanding research work on the constitution of high molecular substances, particularly rubber.

It has been decided to open a special rubber exhibition at Cologne in 1933 at the same time as the Achema VII, Exhibition of Chemical Apparatus. The latter will be conducted by the Dechema, German Society for Chemical Engineering (Main Office Seelze, near Hannover), which also managed former Achema exhibitions; but the Rubber Section will be in charge of the Messe & Ausstellungen G.m.b.H., Cologne. While the opening date will probably be June 2, 1933, for both expositions, the Achema will run until June 11, whereas the Rubber Section will be open throughout the months June, July, August, and September. Prof. E. A. Hauser has been made honorary president.

At the Leipzig Fall Fair, a massage glove was shown, put out by Julius Friedlander G.m.b.H., Berlin, which is said to have an unusually stimulating and lasting effect, making it especially useful in massaging the head to strengthen the nerves there, in facial massage to improve ugly, angular lines, and for health and sport purposes in general.

Firstpara Maker

Firstpara Maker, designated briefly as F. P. M., is a preparation designed for the following purposes: (1) to coagulate fresh latex and disinfect it in a manner similar to the preparation of wild Para rubber; (2) to preserve the serum consistency of the latex as in Para rubber, since the tensile strength of Para rubber is due to these serums, and also because vulcanization is accelerated by their retention, and far better preservation is given to the vulcanized rubber; (3) to eliminate the smoking process and simplify the process of crude rubber preparation.

Austria

Available data show that Austrian imports of crude rubber, gutta-percha, etc., during the first half of 1932 were 10,412 quintals and that reexports were 3,875 quintals.

The quantities of the chief imports and exports of manufactured rubber during the same period were:

	Quintals	
	Imports	Exports
Rubber thread, not covered.....	334	213
Footwear	653	648
Soles and heels.....	7	296
Hose	112	1,435
Packing, included asbestos.....	78	1,661
Automobile tires.....	3,963	1,016
Tires for other vehicles.....	418	366
Tubes	472	245
Solid tires	26	1,096
Goods from soft rubber or cut sheet	796	1,993
Hard rubber and goods thereof.	111	481

Czechoslovakia

The Bata company has at last put its much-heralded automobile tires on the market. These are truck tires and tubes in 2 sizes, 30 by 5 and 32 by 6, produced at the Zlin factory and distributed through the Bata retail shoe stores at prices considerably below those regularly obtained. Since the Bata firm is in a position to produce automobile tires on a large scale if it decides to do so and could distribute cheaply through its 1,960 retail stores located in all parts of the country, the anxiety with which importers and producers here are awaiting developments can easily be appreciated. They have before them the fact that since Bata began manufacturing and selling bicycle tires and tubes prices have declined by 40 to 50%.

Belgium

Japan has now also entered the Belgian canvas footwear market, and representatives of a number of firms: Seymour-Sheldon Co., Kobe; Asaki, Kurume; Nihontabi Kabushiki Kaisha, Yokohama; and A. Wondersan & Co., Yokohama, have been very active contacting with the larger retail outlets. While this action has disturbed wholesalers, they have nevertheless placed substantial orders for Japanese shoes, for the low prices of these articles permit a greater margin of profit whereby it is hoped to offset losses on high-priced stocks that were carried over from former seasons.

Previous to the entry of the Japanese, about 40% of the trade fell to American firms. The other competing firms in Belgium have been Bata, the French Hutchinson and Spalding, and Dunlop, in the better grades; and the German Phoenix and the British Plimsoll and North British concerns for the cheap lines. The advent of the Japanese will naturally seriously affect activities of all these firms while, at the same time, American producers not yet known in Belgium will find it practically impossible to interest importers there unless they can meet the price of Japanese manufacturers.

Rubber Industry in Far East

NETHERLANDS EAST INDIES

Estate Statistics

Reports from the Central Bureau of Statistics show that tapping at the end of June, 1932, was completely stopped in Java and other parts of the Dutch East Indies on 419 estates with an area of 85,106 hectares and partly on 115 estates of 18,455 hectares making in all 103,561 hectares, or 27% of the total tappable area. Shipments of rubber from the Dutch colonies for the first 6 months of 1932 were 115,118 against 141,054 tons the year before, a drop of over 18%. The obvious inference is that a drastic shake-up is in progress in the Dutch Indies and that corresponding declines in outputs from estates will be seen before long.

However before drawing any conclusions from total exports and figures regarding the closing of estates, more especially in Sumatra, it is well to remember, first, that the reduced shipments are largely due to the decreased outputs of native rubber. Thus native exports during the first half of 1932 were only 26,571 tons against 47,191 tons during the corresponding period of 1931, a reduction of over 20,600 tons. As the decrease for all Netherlands Indies, native and estate rubber combined, was just under 26,000 tons, the reduction in output from estates over the first half of 1932 was 5,400 tons. To be sure, the increased cessation of tapping may be reflected in greater reduction in outputs over the second half of 1932; in that case, the indications are that the decline will be heavier for Java than Sumatra.

For we see that of the 419 estates, with area of 85,106 hectares which have stopped all tapping, 219 with area of 51,159 hectares were in Java against 106, with area of 27,796 hectares in Sumatra; that is, twice as many estates with almost double the acreage are out of tapping in Java as compared with Sumatra. In fact the possibility exists that total 1932 shipments from Sumatra may show a much smaller decrease than expected. Crop returns from 60 Sumatra companies, as published by the Rubber Growers' Association, actually show an increase for the first 6 months of 1932 as compared with 1931, 25,449 tons against 24,242. These figures, of course, refer to British-owned companies. But returns published by Dutch companies show a similar trend; of 17 concerns taken at random the majority report increased crops, a number have maintained outputs at the previous year's level; while only 3 show declines. The list follows; except where otherwise indicated the 1931 figures are for the entire year; those for 1932, of course, for 6 months.

Fewer estates are closing in Sumatra than in Java chiefly because it is easier

	Kilograms	
	6 Months, 1932	1931
A'dam Rubber Cultuur Mij.	5,875,800	*5,383,850
A'dam Tapanoeli	157,850	307,000
Bajahang	221,400	*210,600
Bandar	418,000	*343,000
Batangara	370,000	564,800
Batoe Sumatra	44,000	86,669
Deli Batavia	865,000	1,690,000
Deli Mij.	1,108,000	1,965,788
Indische Rubber Comp.	264,740	*242,780
Senembah	570,500	1,179,984
Serbadjadi	518,000	996,860
Silau Sumatra	157,000	313,264
Soengei Lipoet	827,500	1,811,067
Sumatra Caoutchouc	613,500	1,167,412
Sum. Caoutchouc Plantage	419,000	627,500
Sumatra Rubber	437,000	*431,000
Wai Sumatra	241,000	488,633

*6 months.

for the latter to do so. Estates in Java do not have to import coolies at great expense, as in Sumatra. There, as in May-laya, considerations of the costs and inconvenience of returning and again reimporting coolies largely influence the tapping policy of estates. On the other hand there is no doubt that the effect of the outputs from budded stock, about 34% of Sumatra estate rubber is budded, is making itself felt in yields and costs. The superior yields from budded material have already raised the average output on some estates to 500 pounds per acre; while the Holland American Plantation Co. is said to have averaged nearly 700 pounds per acre in 1931. As to costs, as the result of the most drastic economies, good estates in East Coast Sumatra, yielding 400 pounds per acre, can put rubber on the market at 9 guilder cents per pound f. o. b. Belawan; while a few of the best even reduce the figure to 8 cents.

The Javanese estates, as explained above, do not have the same labor problem to consider when planning to close down. Furthermore since a large number of estates in Java produce other crops besides rubber, where possible they drop rubber in favor of other more remunerative crops. This point is indicated by the fact that in East Java, where only about 1/3 of the rubber is grown on plantations devoted exclusively to rubber, in 1930, 27,784 hectares out of 82,705, the area out of tapping is 25,038 hectares, the largest for any section in Java; in fact it is half that for all Java and almost the Sumatra total.

But both in Java and Sumatra many estates that have shut down are probably old and worn out or on poor soil and would have had to close in any event; or they are still too young to be profitable. Yet on most estates still exploited yields are undoubtedly being raised by selective tapping; that is to say, a decline in 27% of the estate area tapped in the Dutch East Indies by no means forecasts a corresponding decline in outputs.

Rubber Forestry

The *Bergcultures* is evidently in favor of rubber forestry. Following the article by J. C. s'Jacob¹ a whole series is to be published. The second installment, just out deals with cases in Java where estates have been left entirely without upkeep.

The Government Rubber Industry may be said to have been the pioneer in this respect in the Dutch colonies. In 1923 one of the poorest sections of the Government Rubber Estate Serpong, started in 1916, was left to itself. There was no upkeep whatever except that lalang was rigidly excluded. After a few years the soil conditions improved so far that attempts were made to establish the green manure *Centrosema*, but with only moderate success. To remedy this condition manuring was resorted to after which the *Centrosema* developed well. However, since the beginning of 1932, all upkeep, except control of lalang, has again been stopped, and within 5 months the section was covered, in some places to more than man's height, with a thick undergrowth.

The Bolong Toge estate furnishes interesting examples of the different ways in which various sections of the same estates reacted to complete cessation of upkeep. In one garden, started in 1918, first clean weeded, then selected weeded, and finally, after an indifferent cover of *Centrosema* had been established, left alone in 1930, a very close spontaneous growth of young *Hevea* completely covered the ground in 2 years. On the other hand, in an older garden, dating from 1906-08, spontaneous growth of young *Hevea* in the same 2 year period was very sparse, the vegetation consisting chiefly of grasses, probably a result of the bad soil conditions. But little lalang was found here.

Still another section of the same estate, planted in 1918, which had been in good condition when upkeep was stopped in 1930, showed a remarkably varied and thick undergrowth including also young *Hevea*. Nowhere appeared a sign of lalang. But on a fourth section also planted in 1918 on very bad soil, abandonment of all control was immediately followed by the invasion of lalang practically everywhere so that except here and there no other plants could survive.

In general the results of the experiment were satisfactory, and except in the last area the trees benefited considerably. It becomes clear, however, that not every plantation can be left without all control and that the fight against lalang must be continued, especially on poorer soils.

¹See INDIA RUBBER WORLD, Sept. 1, 1932, p. 55.

New Trends in Hevea Selection

The problem of Hevea selection is constantly leading investigators into new paths, new at least in regard to Hevea. Thus W. Snoep, of the Besoeki Experiment Station, is investigating the selection of seed on the basis of its suction power. Experiments of this type have for many years been conducted for European crops, but only recently did the Besoeki Experiment Station begin to examine the suction values of the seed of coffee, Hevea, and tobacco. This work is considered especially valuable as it has been found that a positive correlation exists between the suction power of the seed and the yield capacity of other crops investigated. In these tests seeds are placed in a sugar solution, and their suction power is measured by the strength of the solutions at which they germinate.

As far as Hevea is concerned, interest centers in the relation of the suction power of the seed from different clones and yield capacity, growth, and resistance to dry conditions. The values thus obtained might prove useful in judging a clone or potential mother trees; while there is the possibility of influencing output capacity, growth, and uniformity of future plantations by selecting seed on the basis of suction power.

A different line is followed by the planter, v. d. Hoop, who seeks to establish the correlation between yields and the shape and appearance of trees and seeds. After long observation and much recording of yields, etc., he learned that one type of tree apparently dominates on his estates, and that the best yielders are included in this type; similarly with seeds. He concludes that where the particular superior type of seed has been obtained from the superior type of tree mentioned, this seed should be especially considered for propagation purposes, as promising exceptional yielders. So far, he says, his experience agrees with this conclusion, but at present does not cover a sufficient number of cases to provide conclusive proof. His findings, however, appear to open up an interesting line of investigation in connection with the selection of superior planting material.

	Estate A	Cost Per Lb., Cents	Estate B	Cost Per Lb., Cents
Quit rent	\$12,086.50	1.208	\$9,637.50	1.927
Immigration assessment	1,027.00	.103	660.00	.132
Rubber research cess at 2 cents per pkl.	150.00	.015	75.00	.015
Duty at 1%	500.00	.050	250.00	.050
Telephone	328.00	.033	.....	.....
Letter bag	10.00	.....	.....	.....
Sanitary Board assessment	22.00	.....	11.00	.....
Cart license	24.00	.011	12.00	.008
Gun license	10.00	.....	5.00	.....
Rubber license	1.00	.....	1.00	.....
Machinery inspection	65.00	.....	20.00	.....
Total	\$14,201.50	1.420	\$10,671.50	2.132

F. M. S. cent = \$0.00567 U. S. currency.

Norway

Satisfactory tests with pneumatic-tired rail cars have recently been conducted in Sweden and Norway, the *Gummi-Zeitung* learns. Further tests are to be made in Norway on the Oslo-Kornsjo line.

Rubber Research Institute

The Malayan Estate Owners' Association recently passed the following resolution, copies of which were sent to the chief secretary, to the Government of the Federated Malay States, and to the Board of the Rubber Research Institute:

"That the Malayan Estate Owners' Association, with much regret is forced to the view that the administration and organization of the Rubber Research Institute is unsatisfactory and that a Commission or a Committee of Enquiry, with the widest terms of reference, should be appointed to make an independent and full investigation into the affairs of the Institute and to make recommendations for the re-organization of the Institute, and for the future conduct of its affairs in fulfillment of the purposes for which it was established."

Quit Rents

At the recent Malayan Exhibition at Kuala Lumpur, the High Commissioner, Sir Cecil Clementi, announced that as a temporary measure of relief, all current rents due on agricultural lands, including rubber, in the F. M. S. and Johore, in excess of \$2 per acre would be waived. The waiver applies only to current rents and not to arrears carried over from last year.

On many estates the rent had been as high as \$4 per acre, and at present prices for rubber represented a considerable item of expense. In a recent issue of *Malayan Tin & Rubber Journal*, appearing before the welcome announcement regarding rents, a prominent European owner of rubber estates in Malaya gave the following data regarding government yearly charges for 2 estates. Estate A, produces 1,000,000 pounds of rubber annually and has a total area of 3,000 acres of which 2,313 are planted. Estate B, produces 500,000 pounds, has a planted area of 1,360 acres out of a total 2,628 acres. The sums paid out to government departments in a year were:

Rubber Fire-Lighters

Much interest is evinced in the possibilities of rubber fire-lighters as a good outlet for crude rubber. The Rubber Growers' Association is sending out leaflets showing the advantages of these lighters, while the Malayan Information Agency in London is displaying them in its windows. However, the cost of cutting the strips into suitable lengths and packing them, which is now done in England, is a heavy item that practically swallows up all profits; so if rubber fire-lighters are to make real headway, they must yield producers and dealers an adequate return. Therefore the question of preparing them suitably in Malaya for marketing abroad is finding wide discussion.

Recently the Indian inventor, V. K. Singham, gave details on preparing fire-lighters from clean waste and scrap rubber instead of crepe, right on the estate. The scrap, which may be mixed with pulverized charcoal and resinous substances, is masticated thoroughly until it can be forced through a nozzle of ¼- to ¾-inch diameter on to a table sprinkled with powdered chalk. When set, the strips are cut into lengths weighing ½ ounce each and packed with a little chalk between the layers, into cardboard boxes. The proportion of rubber to fillers should not be less than 75%; however, as the price of rubber rises, this percentage of rubber could be decreased to 30% without loss of efficiency if resins are added.

These details were published in the *Straits Budget*, and Mr. Singham is patenting them in London and Washington.

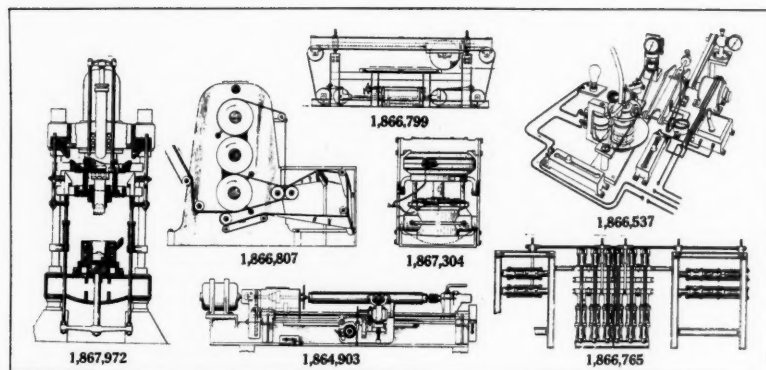
Small Holdings

It has frequently been suggested that Malayan small holdings are always over-tapped so in 1931 a special grant of \$10,000 from the Rubber Research and Propaganda Fund enabled the Department of Agriculture to survey small holdings to investigate tapping methods. So far the indications are that bark consumption on small holdings is considerably less than had been expected. In regard to planting distances, it was found that out of 35 small holdings examined the distances ranged from a minimum of 8 by 10 feet to a maximum of 18 by 18 feet.

Tetrone A

Tetrone A is a patented new accelerator derived from piperidine. It was developed primarily for vulcanization without added sulphur. It is a grayish yellow powder with a specific gravity of approximately 1.4. Sulphurless compounds cured with Tetrone A age substantially as well when no antioxidant is used as do ordinary sulphur containing compounds in the presence of a good antioxidant. Compounds vulcanized with Tetrone A may be cured at temperatures as low as 227° F. and may be cured very quickly at temperatures above 300° F. with no sacrifice of quality.

Patents, Trade Marks, Designs



MACHINERY

United States

- 1,864,903.* **Ring Cutter.** In this machine, designed for cutting rubber fruit jar and similar rings, disk cutters are mounted on opposite sides of the mandrel and operate in parallel planes offset a distance equal to the thickness of one ring. The cutters are simultaneously moved toward and away from the mandrel, thus cutting 2 rings at each operation. H. Gora, Bridgeport, Conn., assignor to Jenkins Bros., New York, N. Y.
- 1,866,537.* **Abrasion Tester.** According to this invention the sample to be tested is preferably of wheel form and is abraded in consequence of its rotation in relation to an abrasive rotary disk. The machine successfully simulates the conditions of usage of vehicle wheels and thus is particularly adapted for testing tire-tread rubber. L. J. Lambourn, Ft. Dunlop, England, assignor to Dunlop Tire & Rubber Corp., Buffalo, N. Y.
- 1,866,765.* **Belting Press.** The structural improvements effected by this invention adapt the press uniformly to stretch a belt, and a number of platens are used to cure belts of different widths or thicknesses simultaneously. All belts may be fed into the press from the same side. D. J. Gregory, New Haven, and W. C. Tift, Seymour, assignors to Farrel-Birmingham Co., Inc., Ansonia, all in Conn.
- 1,866,799.* **Rubber Cutter.** This invention is adapted for cutting slabs of uncured rubber into strips. The cutting mechanism comprises a support for the rubber and a circular cutting disk supported in a cross-head movable in guides above the supports. The cutter is actuated by a cable-connected, fluid-operated motor. E. Clark, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
- 1,866,807.* **Four-ply Stock Apparatus.** This is a device attachable to a 3-

- roll calender to permit calendering a 4-ply sheet from 2 single ply widths of rubber stock. The apparatus brings together 2 single widths of single ply stock produced by a 3-roll calender superimposing them, slitting the sheet, and directing one half of the slitted 2-ply sheet onto the other half of the 2-ply sheet. H. O. Hutchens and A. R. Krause, assignors to Gillette Rubber Co., all of Eau Claire, Wis.
- 1,867,304.* **Press Safety Lock.** This is for locking a tire press in its closed condition and prevents premature opening of the press in case the hydraulic ram pressure should accidentally fail. Locking action is effected by means moving into and out of the path of a rod-like member projecting backward from the movable press head. J. W. Brundage, assignor to Summit Mold & Machine Co., both of Akron, O.
- 1,867,972.* **Molding Press.** In press molding articles from plastic materials an improved method is provided for sealing the mold and subsequently stripping the formed article from the die. Also a novel press construction is arranged automatically to carry out the several steps of the method. L. S. Hubbert, Mt. Gilead, O., and C. J. Zube, Los Angeles, Calif., assignors to Hydraulic Press Mfg. Co., Mt. Gilead, O.
- 1,868,662. **Engraving Machine.** J. C. Jennejohn, assignor to Utility Mfg. Co., both of Cudahy, Wis.
- 1,868,791. **Vulcanizing System.** R. D. Cleveland, assignor to Taylor Instrument Cos., both of Rochester, N. Y.
- 1,868,932. **Sponge Rubber Receptacle Former.** W. Vernet, assignor to Rubbersan Products, Inc., both of New York, N. Y.
- 1,868,959. **Tire Mold.** H. Willshaw and T. Norcross, both of Erdington, England, assignors to Dunlop Tire & Rubber Corp., Buffalo, N. Y.
- 1,869,011. **Laminated Sheetting Apparatus.** O. J. Kuhlke, assignor, by mesne assignments, to National Rubber Machinery Co., Akron, O.
- 1,869,317. **Tire Making Machine.** H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

- 1,869,322. **Chuck.** A. A. Bush, assignor to Firestone Tire & Rubber Co., both of Akron, O.
- 1,869,550. **Pressing and Cutting Template.** I. and L. Dorogi, both of Budapest, assignors of $\frac{1}{2}$ to Dr. Dorogi es Tarsa Gummigyar R. T., Budapest-Albertfalva, all in Hungary.
- 1,869,598. **Vulcanizing Apparatus.** C. W. Leguillon, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,869,656. **Tire Building Apparatus.** J. I. Black, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,869,671. **Vulcanizing Mold.** B. De Mattia, Clifton, N. J., assignor to National Rubber Machinery Co., a corp. of O.
- 1,869,680. **Removing Treads from Tires.** W. B. Freeman, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,869,690. **Tube Splicer.** O. F. Homier and H. L. Young, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.
- 1,869,691. **Coating Apparatus.** E. C. Hopkins, Belmont, Mass., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,869,833. **Masticator.** T. H. Williams, Cuyahoga Falls, assignor to National Rubber Machinery Co., Akron, both in O.
- 1,870,255. **Inner Tube and Tire Mold.** A. R. Krause and R. W. Hutchens, assignors to Gillette Rubber Co., all of Eau Claire, Wis.
- 1,870,805. **Solid Tire Curing Apparatus.** J. R. Gammeter, Akron, O.
- 1,870,990. **Applying Liquid Dispersions to Wire.** R. R. Evans, Watertown, assignor to Simplex Wire & Cable Co., Boston, both in Mass.
- 1,871,083. **Vulcanizer.** C. J. Randall, Woonsocket, R. I., assignor to Good-year's India Rubber Glove Mfg. Co., Naugatuck, Conn.
- 1,871,118. **Watchcase Heater.** H. A. Denmire, assignor to General Tire & Rubber Co., both of Akron, O.
- 1,871,119. **Bead Flipper Forming Device.** H. A. Denmire, assignor to General Tire & Rubber Co., both of Akron, O.
- 1,871,120. **Tire and Tube Airbag.** H. A. Denmire, assignor to General Tire & Rubber Co., both of Akron, O.
- 1,871,160. **Watchcase Heater.** H. A. Denmire, assignor to General Tire & Rubber Co., both of Akron, O.
- 1,871,296. **Endless Mandrel.** H. T. Battin, Ridgewood, N. J., assignor to Morgan & Wright, Detroit, Mich.
- 1,871,334. **Fabric Cutter.** G. K. McNeill, assignor to Morgan & Wright, both of Detroit, Mich.
- 1,871,348. **Rubber Treating Apparatus.** I. J. Turnbull, New Haven, Conn., assignor to Morgan & Wright, Detroit, Mich.
- 1,871,364. **Ring Filtering Mandrel.** W. A. Gibbons, Montclair, N. J., assignor to Morgan & Wright, Detroit, Mich.
- 1,871,560. **Rubber Stock Feeder.** I. I. Remark, assignor to General Tire & Rubber Co., both of Akron, O.
- 1,871,581. **Tube Vulcanizer Valve Holder.** W. Breth, assignor to Gen-

*Pictured in group illustration.

- eral Tire & Rubber Co., both of Akron, O.
- 1,871,604. **Bead Placing Ring.** R. M. Graham, assignor to General Tire & Rubber Co., both of Akron, O.
- 1,871,608. **Tire Casing Conveyor.** E. L. Hallinan, assignor to General Tire & Rubber Co., both of Akron, O.
- 1,871,620. **Watchcase Heater.** H. T. Kraft, assignor to General Tire & Rubber Co., both of Akron, O.
- 1,871,642. **Airbag Remover.** H. Willshaw, Sutton Coldfield, and L. S. Blanchard, Hampstead, both in England, assignors to Dunlop Rubber Co., Ltd., a British corp.
- 1,871,766. **String Treating Device.** H. Willshaw, Wyld Green, S. N. Goodhall, Marston Green, and C. Folliss, assignors to Dunlop Rubber Co., Ltd., both of Birmingham, all in England.
- 1,871,851. **Knit Fabric Elastic Insert.** K. Howie, assignor to Wildman Mfg. Co., both of Norristown, Pa.
- 1,872,158. **Annular Article Mold.** C. E. Maynard, Northampton, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.
- 1,872,327. **Stripping Machine.** E. L. Patten, New Haven, assignor to Goodyear's India Rubber Glove Mfg. Co., Naugatuck, both in Conn.
- 1,872,830. **Band Building Machine.** F. J. Shook, Akron, and A. L. Heston, Columbiana, assignors, by mesne assignments, to National Rubber Machinery Co., Akron, all in O.
- 1,873,148. **Tube Tester.** E. T. Pedranti, Petaluma, Calif.

Dominion of Canada

- 324,674. **Vented Rubber Stamp Mold.** R. Evans, Highland Park, Ill., U. S. A.
- 324,986. **Vulcanizing Apparatus.** Goodyear Tire & Rubber Co., assignee of R. W. Snyder, both of Akron, O., U. S. A.
- 325,026. **Molding Press.** Summit Mold & Machine Co., assignee of J. W. Brundage, both of Akron, O., U. S. A.

United Kingdom

- 370,593. **Tire Casing Mold.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
- 370,971. **Tire Mold.** Dunlop Rubber Co., Ltd., London, and H. Willshaw, of Dunlop Rubber Co., Ft. Dunlop.
- 371,065. **Tire Vulcanizing Press.** W. W. Triggs, London. (R. W. Boyden and C. A. Dana, receivers, of Fisk Rubber Co., all of Chicopee Falls, Mass., U. S. A.)
- 372,161. **Vulcanizer.** H. G. MacLennan, Victoria, Australia.

Germany

- 557,405. **Vulcanizing Press.** Dunlop Rubber Co., Ltd., London, England. Represented by R. and M. M. Wirth, C. Weihe, and H. Weil, all of Frankfurt a. M., and T. R. Koehn-horn, Berlin.
- 557,756. **Measuring Plasticity.** Magyar Ruggyantaaruyar Reszvenytarsasag, Budapest, Hungary. Represented by C. Clemente, Berlin.

PROCESS

United States

- 1,868,787. **Composition.** H. Ziegner, Hagen, Germany.
- 1,869,531. **Cemented Pile Fabric.** E. H.

- Ward, E. Orange, and E. G. Jegge, Montclair, assignors to Lea Fabrics, Inc., Newark, all in N. J.
- 1,869,620. **Tire.** F. C. Rogers and V. B. Gay, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.
- 1,869,636. **Cementing Rubber to Metal.** R. M. Warner, Barberton, O., assignor, by mesne assignments, to Miller Rubber Co., Inc., Wilmington.
- 1,869,638. **Rubber Cement.** R. M. Warner, Barberton, O., assignor, by mesne assignments, to Miller Rubber Co., Inc., Wilmington, Del.
- 1,870,359. **Press-Molded Footwear.** H. C. L. Dunker, Helsingborg, Sweden.
- 1,870,407. **Delustering Textile Material.** C. Dreyfus, New York, N. Y., G. W. Miles, Boston, Mass., and H. Platt, Cumberland, Md., assignors to Celanese Corp. of America, a corp. of Del.
- 1,870,408. **Coloring Textile Material.** C. Dreyfus, New York, N. Y., G. W. Miles, Boston, Mass., and H. Platt, Cumberland, Md., assignors to Celanese Corp. of America, a corp. of Del.
- 1,870,561. **Pneumatic Tube.** A. G. Fitz Gerald, Brookline, Mass.
- 1,870,567. **Artificial Leather.** R. B. Hill, assignor to Brown Co., both of Berlin, N. H.
- 1,870,775. **Latex Dipped Goods.** J. R. Gammeter, Akron, O.
- 1,870,788. **Article from Aqueous Dispersions.** D. F. Twiss, Wyld Green, F. T. Purkis, Moseley, and E. A. Murphy, Wyld Green, assignors to Dunlop Rubber Co., Ltd., Birmingham, all in England.
- 1,870,825. **Printing on Inflatable Articles.** C. C. Sprague, Westboro, Mass.
- 1,870,843. **Bias Fabric.** R. J. Ford, assignor to National India Rubber Co., both of Bristol, R. I.
- 1,870,870. **Footwear.** H. D. Rice, Bristol, R. I., assignor to Goodyear's India Rubber Glove Mfg. Co., Naugatuck, Conn.
- 1,870,883. **Rubberized Fabric.** S. J. Williamson, Belmont, assignor to American Rubber Co., E. Cambridge, both in Mass.
- 1,870,886. **Reclaiming Vulcanized Rubber.** A. E. Barnard, Norristown, Pa., assignor to Dispersions Process, Inc., Dover, Del.
- 1,871,171. **Separator.** W. S. Gould, New York, and W. B. Osborne, Buffalo, both in N. Y.
- 1,871,313. **Footwear.** R. J. Ford, assignor to National India Rubber Co., both of Bristol, R. I.
- 1,871,412. **Rubberized Cord.** E. Hopkinson, New York, N. Y.
- 1,871,438. **Tire Casing.** A. O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Mich.
- 1,871,568. **Printing Plate.** H. Swan, Upper Montclair, and S. Higgins, Verona, both in N. J., assignors to Bakelite Corp., New York, N. Y.
- 1,871,731. **Plasterboard.** J. S. Offutt, assignor to United States Gypsum Co., both of Chicago, Ill.
- 1,871,890. **Shoe.** F. D. Kinney, Wenhams, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.
- 1,871,953. **V-Belt.** R. H. Chilton, assignor to Inland Mfg. Co., both of Dayton, O.
- 1,871,974. **Heat Insulation Material.** A. H. Flower and J. C. Housekeeper, assignors to Inland Mfg. Co., all of Dayton, O.
- 1,872,037. **Brush.** E. M. Hill, Brookline, assignor to Whiting-Adams Co., Boston, both in Mass.

- 1,872,228. **Insulated Wire.** T. V. Binmore, Long Island City, N. Y., and H. De B. Rice, assignors to National India Rubber Co., both of Bristol, R. I.
- 1,872,389. **Cloth.** A. Benowitz, assignor, by mesne assignments, to Synthetic Fur Mills Corp., both of New York, N. Y.

Dominion of Canada

- 324,629. **Delustering Textile Material.** C. Dreyfus, New York, N. Y., co-inventor with and assignee of G. W. Miles, Boston, Mass., and H. Platt, Cumberland, Md., all in the U. S. A.
- 324,670. **Press-Molded Footwear.** H. C. L. Dunker, Helsingborg, Sweden.
- 324,819. **Concentrating Aqueous Dispersions.** Societa Italiana Pirelli, assignee of U. Pestalozza, both of Milan, Italy.
- 324,853. **Soft Rubber.** R. M. Ungar, inventor, and P. Schidrowitz, assignee of $\frac{1}{4}$ of the interest, both of London, England.
- 324,962. **Abrasive Article.** Carborundum Co., assignee of R. C. Benner, both of Niagara Falls, N. Y., U. S. A.
- 325,048. **Articles from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of E. A. Murphy, E. W. B. Owen, and D. F. Twiss, co-inventors, all of Birmingham, England.
- 325,138. **Abrasive Article.** Carborundum Co., assignee of C. S. Nelson, both of Niagara Falls, N. Y., and G. H. Porter, Pittsfield, Mass., co-inventors, all in the U. S. A.

United Kingdom

- 370,390. **Molding Face Masks.** O. H. Drager, assignee of H. Dragerwerk and B. Drager, all of Lubeck, Germany.
- 370,578. **Vulcanized Rubber Sheetting.** P. Schidrowitz, M. W. Philpott, and R. M. Ungar, all of London.
- 371,167. **Molding Nipples by Dipping.** F. Brown, Philadelphia, Pa., U. S. A.
- 371,251. **Molding Filter-Press Plates.** M. Wilderman, Monaco, France.
- 371,811. **Material for Coating Fabric.** J. S. Campbell, Surrey.
- 371,817. **Pile Fabric.** A. J. Stephens, London. (Collins & Aikman Corp., Philadelphia, Pa., U. S. A.)
- 372,247. **Protecting Leather during Makeup.** Etablissements R. Schneider, Paris, and A. Poelman, Seine, both in France.

CHEMICAL

United States

- 1,869,172. **Compounding Rubber.** B. F. Schwalm, Pittsburgh, Pa., assignor, by mesne assignments, to Neville Co., a corp. of Pa.
- 1,869,557. **Rubber Substitute.** K. A. Gillespie, assignor to Stamford Rubber Supply Co., both of Stamford, Conn.
- 1,869,624. **Age Resister.** W. Scott, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.
- 1,869,657. **Rubber Composition.** H. E. Bowers, Chicago, Ill., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,869,734. **Elastic Plastic Material.** J. Baer, Basel, Switzerland.
- 1,869,783. **Adhesive.** L. C. Stille, Val-

paraiso, Ind., assignor, by mesne assignments, to George C. Peterson Co., Chicago, Ill.

- 1,869,862. **Accelerator.** L. Orthner, Leverkusen a. R., assignor to I. G. Farbenindustrie A. G., Frankfurt a. M., both in Germany.
- 1,870,880. **Treatment of Rubber.** W. P. TER Horst, Packanack Lake, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
- 1,871,036, 1,871,037, and 1,871,038. **Accelerator.** S. M. Cadwell, Leonia, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
- 1,872,112. **Road Composition.** A. E. Brown, Brentwood, assignor to Universal Rubber Paviers, Ltd., Audenshaw, both in England.
- 1,873,934, 1,873,935, 1,873,936, and 1,873,937. **Accelerator.** W. Lommel, Wiesdorf a. R., T. Goost, Leverkusen a. R., and H. Friedrich, Wiesdorf a. R., assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.

Dominion of Canada

- 324,968. **Rubber Cement.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. Hazell, New York, N. Y., U. S. A.
- 324,969. **Adhesive.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. Hazell, New York, N. Y., and H. F. Stowe, Rutherford, N. J., co-inventors, both in the U. S. A.
- 324,987. **Accelerator.** Goodyear Tire & Rubber Co., assignee of A. M. Clifford, both of Akron, O., U. S. A.
- 325,019. **Accelerator.** Rubber Service Laboratories Co., Akron, O., assignee of R. L. Sibley, Nitro, W. Va., both in the U. S. A.

United Kingdom

- 369,561. **Rubber Building Composition.** R. Critchley, Ltd., and A. E. Bond, both of Manchester.
- 370,723. **Rubber Composition.** Joint Francais Soc. Anon., Paris, France.
- 370,741. **Rubber Composition.** J. C. Patrick, Trenton, N. J., U. S. A.
- 370,889. **Rubber Filler.** Process Development Co., Long Beach, Calif., U. S. A.
- 370,937. **Sticky Rubber Composition.** Magya Ruggyantarugyar Reszvenytarsasag, Budapest, Hungary.
- 371,276. **Accelerator.** Naugatuck Chemical Co., Naugatuck, Conn., assignee of L. H. Howland, Nutley, N. J., both in the U. S. A.
- 371,325. **Accelerator.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
- 371,339. **Adhesive.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss and F. A. Jones, both of Ft. Dunlop.
- 371,474. **Preserving Rubber.** Imperial Chemical Industries, Ltd., London, H. M. Bunbury, J. S. H. Davies, and W. J. S. Naunton, all of Manchester.
- 371,916. **Rubber Composition.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)
- 372,217. **Paper Impregnating Composition.** Naugatuck Chemical Co., Naugatuck, Conn., assignee of W. A. Gibbons, Montclair, N. J., both in the U. S. A.
- 372,328. **Accelerator.** L. Mellersh-Jackson, London. (Naugatuck Chemical Co., Naugatuck, Conn., U. S. A.)
- 372,623. **Accelerator.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss and F. A. Jones, both of Dunlop Rubber Co., Ft. Dunlop.

- 372,792. **Rubber Composition.** J. W. Nelson, Kendal, Westmoreland.

Germany

- 556,555. **Conversion Products.** I. G. Farbenindustrie A. G., Frankfurt a. M.
- 556,875. **Vulcanizing Process.** Naugatuck Chemical Co., Naugatuck, Conn., U. S. A. Represented by K. Michaelis, Berlin.
- 556,904. (Addition to Patent No. 425,770.) **Microporous Rubber.** H. Beckmann, Berlin-Zehlendorf.
- 557,043. **Microporous Masses.** R. H. Koppel, Aachen.
- 557,138. **Antiaiger.** I. G. Farbenindustrie A. G., Frankfurt a. M.
- 557,270. **Conversion Products.** F. Kirchhof, Harburg-Wilhelmsburg.

LATEX

United States

- 1,871,572. **Reenforced Rubber.** W. B. Wescott, Dover, assignor to Rubber Latex Research Corp., Boston, both in Mass.
- 1,872,161. **Latex Preservation.** J. McGavack, Leonia, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
- 1,873,913. **Rubber Coagulation.** W. B. Wescott, Boston, assignor to Dewey & Almy Chemical Co., Cambridge, both in Mass.

Dominion of Canada

- 324,818. **Rubber Composition.** Societa Italiana Pirelli, assignee of M. Faldini, both of Milan, Italy.

United Kingdom

- 370,008. **Making Rubber Thread.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and E. A. Murphy and W. G. Gorham, both of Dunlop Rubber Co., Ft. Dunlop.
- 371,445. **Sponge Rubber.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and W. H. Chapman and D. W. Pounder, both of Dunlop Rubber Co., Ft. Dunlop.
- 372,775 and 372,776. **Rubber Composition.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and E. A. Murphy, F. T. Purkis, and D. F. Twiss, all of Dunlop Rubber Co., Ft. Dunlop.
- 372,836. **Concentrated Latex.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and D. F. Twiss, of Dunlop Rubber Co., Ft. Dunlop.

Germany

- 556,527. **Separating Rubber from Dispersions.** Siemens Elektro-Osmose G. m. b. H., Berlin-Siemensstadt.
- 557,636. **Purifying Rubber or Latex.** Electrical Research Products, Inc., New York, N. Y., U. S. A. Represented by B. Kugelmann, Berlin.

GENERAL

United States

- 1,868,681. **Rope.** E. V. Wyatt, Somerville, Mass.
- 1,868,726. **Clothespin.** D. H. Collier, Carbon, Ind.

- 1,868,773. **Ice Cream Shipper.** S. O. Staake, assignor of 1/2 to R. W. Hutchens, both of Eau Claire, Wis.
- 1,868,794. **Wiper Device.** G. L. Fuller and W. F. Breen, Santa Maria, Calif.
- 1,868,798. **Faucet Hose Connection.** S. M. Kass, Philadelphia, Pa.
- 1,868,893. **Massage and Spray.** R. B. Gentle, New York, N. Y.
- 1,869,021. **Expansion Joint.** G. W. Perks, assignor of 1/2 to J. R. Gam-meter, both of Akron, O.
- 1,869,051. **Tire Pressure Relief Valve.** R. C. Davis, Gloucester, Mass.
- 1,869,132. **Spring Shackle.** R. H. Chilton, assignor to Inland Mfg. Co., both of Dayton, O.
- 1,869,135. **Inflatable Ball.** J. A. Dubow, Chicago, Ill.
- 1,869,316. **Doorcheck.** I. W. Robertson, assignor to Firestone Tire & Rubber Co., both of Akron, O.
- 1,869,607. **Grafting and Budding Tape.** A. B. Merrill, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,869,655. **Impeller Blade.** J. D. Beebe, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,869,793. **Buffer.** H. W. Bailey, Portland, Ore.
- 1,869,868. **Rubber Printing Stamp.** L. P. Selden, assignor to S. S. Rosendorf, both of Richmond, Va.
- 1,869,932. **Strip Gasket.** L. S. Brown, Los Angeles, Calif.
- 1,869,958. **Elastic Fabric.** C. Dreyfus, New York, N. Y.
- 1,870,060. **Section Insulator.** R. H. McCafferty, Wilkinsburg, Pa., assignor to Westinghouse Electric & Mfg. Co., a corp. of Pa.
- 1,870,098. **Antitobacco Confection.** H. W. Cox and D. H. Moore, both of Weston-Super-Mare, England; said Moore assignor to said Cox.
- 1,870,323. **Insulating Material.** G. Cattaneo, Milan, Italy.
- 1,870,484. **Twin Tire Pressure Control.** J. O. Basta, Oak Park, Ill.
- 1,870,574. **Tire Inflator Valve.** J. F. Key, assignor to First Trust & Savings Bank of Pasadena, as trustee, both of Pasadena, Calif.
- 1,870,604. **Football.** C. Coles, assignor to Rawlings Mfg. Co., both of St. Louis, Mo.
- 1,870,750. **Exerciser.** M. B. Reach, Springfield, Mass., assignor to A. G. Spalding & Bros., New York, N. Y.
- 1,870,756. **Shaving Brush.** E. Seykora, Vienna, Austria.
- 1,870,773. **Composition Roller.** C. W. Elder, Roy, Wash.
- 1,870,801. **Sprocket and Chain.** E. P. Engstrom, assignor to J. R. Gam-meter, both of Akron, O.
- 1,870,853. **Fountain Pen.** T. H. Lassagne, Oakland, Calif.
- 1,870,862. **Golf Ball.** A. G. McKinnon, Cranston, assignor to Revere Rubber Co., Providence, both in R. I.
- 1,871,078. **Color Matching Chart.** B. Nash, Short Hills, N. J., assignor to Revere Rubber Co., Providence, R. I.
- 1,871,086. **Undergarment.** G. E. Rutledge, assignor to Vassar Swiss Underwear Co., both of Chicago, Ill.
- 1,871,113. **Suction Cup.** O. L. Compter and J. Ménard, both of Buenos Aires, Argentina.
- 1,871,173. **Bow Tie.** L. E. Grossman, Brooklyn, N. Y.
- 1,871,341. **Spring Cover.** D. K. Pope, Cleveland, O.
- 1,871,376. **Mounting Bracket.** W. C. Keys, Detroit, Mich., assignor to Mechanical Rubber Co., Cleveland, O.

- 1,871,390. **Shock Reducer.** E. E. Reynolds, Detroit, Mich., assignor to Mechanical Rubber Co., Cleveland, O.
- 1,871,424. **Antiskid Device.** F. A. Olmstead, Cleveland Heights, assignor to Chain Products Co., Cleveland, both in O.
- 1,871,520. **Milking Machine Cup.** F. Henrard, Brussels, assignor to Ecremeuses Melotte Societe Anonyme, Remicourt, both in Belgium.
- 1,871,810. **Fire Hose Faucet Connector.** F. L. Lester, Los Angeles, Calif.
- 1,871,861. **Oscillating Joint.** E. F. Rossman, assignor to Delco Products Corp., both of Dayton, O.
- 1,871,883. **Universal Joint Casing.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.
- 1,871,918. **Oscillating Joint.** E. F. Rossman, assignor to Delco Products Corp., both of Dayton, O.
- 1,871,921. **Flexible Connector.** C. R. Short, Detroit, Mich., assignor to Inland Mfg. Co., Dayton, O.
- 1,871,957. **Oscillating Pivot Joint.** W. A. Chryst, assignor to Delco Products Corp., both of Dayton, O.
- 1,871,963. **Flexible Connector.** E. J. Dill, assignor to Inland Mfg. Co., both of Dayton, O.
- 1,871,981. **Spring Shackle.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.
- 1,872,003. **Tire Chain Cross Link.** B. H. Pratt, Milwaukee, Wis., assignor to Fisk Rubber Co., Chicopee Falls, Mass.
- 1,872,046. **Container Closure.** M. C. Teague, Jackson Heights, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
- 1,872,068. **Tire Low Pressure Signal.** W. H. Brown, Shaker Heights, assignor to Spicer Airflator, Inc., Cleveland, both in O.
- 1,872,233. **Hammer Crusher.** G. W. Borton, New Lisbon, N. J., assignor to Pennsylvania Crusher Co., Philadelphia, Pa.
- 1,872,259. **Yielding Connection.** J. G. Eldridge, Detroit, Mich., assignor to Mechanical Rubber Co., Cleveland, O.
- 1,872,459. **Air Inflated Bladder.** W. A. Knauer, Philadelphia, Pa.
- 1,872,471. **Fastening Means.** R. K. Lee, assignor to Chrysler Corp., both of Detroit, Mich.
- 1,872,539. **Hood Lacing.** A. B. Werdehoff, Orton, assignor to Chrysler Corp., Detroit, both in Mich.
- 1,872,580. **Motor Mounting.** J. K. Harness and W. E. Hann, assignors to Chrysler Corp., all of Detroit, Mich.
- 1,872,589. **Cleaner.** C. A. Hoff, assignor to Kristee Mfg. Co., both of Akron, O.
- 1,872,644. **Hair Curler.** E. E. Baldwin, Denver, Colo.
- 1,872,763. **Vibration Dampener.** R. K. Lee, Detroit, assignor to Chrysler Corp., Highland Park, both in Mich.
- 1,872,765, 1,872,766, 1,872,767, and 1,872,768. **Motor Mounting.** R. K. Lee, Highland Park, assignor to Chrysler Corp., Detroit, both in Mich.
- 1,872,846. **Floor Covering Under-Pad.** H. D. Thiele, Milwaukee, Wis.
- 1,873,094. **Elastic Fabric.** H. C. Winton, assignor to Everlastik, Inc., both of Chelsea, Mass.
- 1,873,118. **Windshield Wiper.** C. A. and E. L. Jr., Gooley, both of Harrington, Wash.
- 1,873,218. **Freezing Tray.** A. W. Scott, assignor to Inland Mfg. Co., both of Dayton, O.

- 1,873,221. **Baseball.** G. Senn, Green Bay, Wis.
- 1,873,287. **Freezing Tray.** R. H. Chilton, Dayton, O., assignor to General Motors Corp., Detroit, Mich.
- 1,873,303. **Pressure Control Mechanism.** G. A. De Langie, assignor to E. L. De Langie, both of Newport, R. I.
- 1,873,342. **Film Examiner.** I. Serrurier, Hollywood, Calif.
- 1,873,487. **Hosiery Elastic Top.** P. Schönfeld, Chemnitz, Germany.
- 1,873,503. **Wash Rag.** R. Stewart, Ozone Park, N. Y.
- 1,873,504. **Running Board.** H. D. Stewart, assignor to Armstrong Cork Co., both of Lancaster, Pa.
- 1,873,508. **Ice Tray Cover.** C. H. Tanger, Evansville, Ind., assignor to Serval, Inc., New York, N. Y.
- 1,873,583. **Garment Band.** J. F. Hargreaves, assignor to Faultless Mfg. Co., both of Baltimore, Md.
- 1,873,843. **Aerating Apparatus Porous Medium.** W. T. MacDonald, Douglas, Ariz., assignor to General Engineering Co., Salt Lake City, Utah.
- 1,873,874. **Hair Waving Clamp.** G. Decker, assignor to Philad Co., both of Cleveland, O.
- 1,873,904. **Shoe Cleat.** G. L. Pierce, Brooklyn, assignor to A. G. Spalding & Bros., New York, both in N. Y.

Dominion of Canada

- 324,457. **Telephone Dialing Base.** J. D. Hogle, Montreal, P. Q.
- 324,482. **Wrapper.** E. Sievers, Berlin, Germany.
- 324,547. **Elastic Belt Fabric.** Granby Elastic Web, Ltd., assignee of P. H. Boivin, both of Granby, P. Q.
- 324,555. **Budding and Grafting Plaster.** Johnson & Johnson, Ltd., Montreal, P. Q., assignee of P. B. L'Homme-dieu, New Brunswick, N. J., U. S. A.
- 324,568. **Railway Wheel.** Michelin & Cie., Puy-de-Dome, assignee of P. M. Bourdon, Paris, both in France.
- 324,569. **Railway Tire.** Michelin & Cie., Puy-de-Dome, assignee of P. M. Bourdon, Paris, both in France.
- 324,705. **Armored Tire.** J. Stiner, Thun, Switzerland.
- 324,743. **Check Valve.** Canadian Westinghouse Co., Ltd., Hamilton, Ont., assignee of S. G. Down, Edgewood, Pa., U. S. A.
- 324,782. **Elastic Fabric.** Granby Elastic Web, Ltd., assignee of P. H. Boivin, both of Granby, P. Q.
- 324,799. **Flexible Garter Band.** Nobelt Co. of America, assignee of A. J. Krein, both of Baltimore, Md., U. S. A.
- 324,887. **Bath Brush.** E. Cloutier, Montreal, P. Q.
- 324,901. **Cushion.** O. Krichbaum, Delaware, O., U. S. A.
- 324,905. **Gas Valve.** A. Lenktis, Brooklyn, N. Y., U. S. A.
- 324,920. **Cylinder Honing Device.** J. Sunnen, Kirkwood, Mo., U. S. A.
- 325,161. **Footwear Knitted Lining.** Holden Knitting Co., assignee of R. M. Holden and J. F. Roberts, co-inventors, all of Worcester, Mass., U. S. A.
- 325,166. **Safety Hat.** Kaufman Rubber Co., Ltd., assignee of J. C. Howard, both of Kitchener, Ont.
- 325,178. **Running Board.** Ohio Rubber Co., assignee of G. F. Cavanagh, both of Cleveland, O., U. S. A.
- 325,207. **Latex Rubber Thread.** L. W. Joyce, Greensboro, N. C., U. S. A.

United Kingdom

- 370,005. **Driving Belt.** A. L. Freeland, Dayton, O., U. S. A.
- 370,583. **Tire.** S. Palli, C. De Cecco, and C. Sivier, all of Turin, Italy.
- 370,698. **Boot Upper.** I. Goth, Berlin, Germany.
- 370,848. **Cable.** R. Bosch A. G., Stuttgart, Germany.
- 371,118. **Submarine Cable.** Siemens Bros. & Co., Ltd., London, and H. G. Wood, Kent.
- 371,216. **Insulator.** International General Electric Co., Inc., New York, N. Y., U. S. A., assignee of Allgemeine Elektrizitäts-Ges., Berlin, Germany.
- 371,261. **Football.** Michelin & Cie., Puy-de-Dome, France.
- 371,311. **Window Stop.** G. D. Peters & Co., Ltd., and A. C. Riley, both of Buckinghamshire.
- 371,345. **Resilient Wheel.** G. Rennie, Edinburgh, Scotland.
- 371,545. **Signalling Cable.** Siemens Bros. & Co., London, and H. G. Wood, Kent.
- 371,602. **Flooring.** H. Shimidzu, Tokyo, Japan.
- 371,625. **Fluid Pressure Relieving Device.** General Cable Corp., assignee of D. M. Simmons, both of New York, N. Y., U. S. A.
- 371,630. **Compound Fabric.** N. N. Konisberg, Manchester.
- 371,681. **Tire Antiskid Device.** W. Tait, Reading, Pa., U. S. A.
- 371,722. **Denture.** P. Bergerhausen, Düren, and J. Kufferath, Kreis Düren, both in Germany.
- 371,883. **Pneumatic Tire.** C. G. J. Briquet and A. E. Dmitrieff, both of Vilvorde, Belgium.
- 372,031. **Floor Covering.** R. Brown, London.
- 372,200. **Foot Arch Support.** Scholl Mfg. Co., Ltd., and F. J. Scholl, both of London.
- 372,214. **Fountain Pen.** E. G. C. Barton, London.
- 372,219. **Compound Glass.** T. C. Redfern, J. F. W. Stuart, T. W. Holt, and Aeroplex, Ltd., all of Manchester.
- 372,235. **Finger Stall.** Naamlooze Venootschap Voorheen Geb. Merens, Haarlem, Holland.
- 372,537. **Flooring and Paving Slab.** H. Shimidzu, Tokyo, Japan.
- 372,596. **Paving Slab.** W. P. Calder, London.

Germany

- 556,492. **Syringe.** E. Weigle, Feuerbach i. Württbg.
- 556,493. **Inhaling Apparatus.** A. Schoenlank and H. Syrowy, both of Zurich, Switzerland. Represented by H. Syrowy, Hannover.

TRADE MARKS

United States

- 296,184. **"Workwell."** Belting. Victor Balata & Textile Belting Co., Easton, Pa.
- 296,278. **Clover Farm.** Jar rings. Grocers & Producers Co., doing business as Clover Farm Stores, Cleveland, O.
- 296,305. **"Buildor."** Essex Rubber. Toy blocks. Essex Rubber Co., Trenton, N. J.
- 296,311. **Ki-Maco.** Prophylactic articles. Killian Mfg. Co., Akron, O.
- 296,313. **Suntex.** Balloons. Oak Rubber Co., Ravenna, O.

EDITOR'S BOOK TABLE

New Publications

- 296,314. **Balltex.** Balloons. Oak Rubber Co., Ravenna, O.
- 296,315. **Bartex.** Balloons. Oak Rubber Co., Ravenna, O.
- 296,335. **Okolite.** Insulated wires and cables. Okonite Co., Passaic, N. J.
- 296,353. Representation of a still enclosed in a hexagon. Chemicals. Naugatuck Chemical Co., New York, N. Y.
- 296,355. Representation of a still. Chemicals. Naugatuck Chemical Co., New York, N. Y.
- 296,454. **The Brute.** Golf balls. Golf Ball, Inc., Chicago, Ill.
- 296,455. **Collegian.** Golf balls. Golf Ball, Inc., Chicago, Ill.
- 296,456. **Longflite.** Golf balls. Golf Ball, Inc., Chicago, Ill.
- 296,457. **Long Shot.** Golf balls. Golf Ball, Inc., Chicago, Ill.
- 296,458. **Red Fox.** Golf balls. Golf Ball, Inc., Chicago, Ill.
- 296,459. **Universal.** Golf balls. Golf Ball, Inc., Chicago, Ill.
- 296,462. **Tru-Flesh.** Dolls. Ideal Novelty & Toy Co., Brooklyn, N. Y.
- 296,541. **T-S-100, The Trackless Rubber Tile.** Tiles and flooring. American Rubber Products Corp., New York, N. Y.
- 296,579. **Wavesetta.** Combs. American Hard Rubber Co., Hempstead, N. Y.
- 296,589. **Non Skidder.** Wear plates for rubber heels. Holtite Mfg. Co., Baltimore, Md.
- 296,606. Representations of and the words: "**Reg'lar Fellers.**" Sporting goods. P. Goldsmith Sons Co., Cincinnati, O.
- 296,614. Label bearing representation of a golf ball and the words: "**Royce Golf Balls, Custom Built, The World's Finest Golf Ball.**" Golf balls. Supreme Golf Ball Co., Chicago, Ill.
- 296,671. Representation of a bow superimposed upon rays and bearing the word: "**Beauray.**" Elastic fabric. Ideal Linen Mesh Co., Poughkeepsie, N. Y.
- 296,675. Label bearing representation of a knight in armor and the word: "**Armored.**" Tire patches. C. A. Domzalski, Detroit, Mich.
- 296,703. **L & R.** Heels and taps. I. T. S. Co., Elyria, O.
- 296,769. Representation of a jar ring. Jar rings. Cupples Co., St. Louis, Mo.

"**Rohgummi - Balata - Guttapercha.**" Otto Krahn, Grimm 19, Hamburg, Germany. This card folder of pocket size comprises price conversion tables for crude rubber in dollars, marks, and Dutch guilders. The tables are based on pounds throughout and range from $\frac{1}{16}$ d. to 4 d. by thirty-seconds. A table of decimal equivalents for this division is introduced. A table of multipliers is also included that makes possible the quick and accurate conversion of the gold pound prices according to the various rates into the daily market equivalents. This set of tables is for free distribution and should prove of value to rubber dealers and manufacturers.

"**Laboratory Report No. 157, Tetrone A.**" E. I. du Pont de Nemours & Co., Rubber Chemicals Section, Wilmington, Del. This report discusses the mechanism of vulcanization without sulphur, and directions are given for the use of Tetrone A in compounding practice. It contains valuable information on the effect of various compounding ingredients used in connection with Tetrone A and its use with added sulphur. Directions for its factory handling and data are given on physical properties and aging value of this accelerator in so-called super-aging stocks.

"**'Jem' Rubber Balls.** Illustrated Price List of High Quality Rubber Products." Jem Rubber Co., Ltd., 3723 Dundas St. W., Toronto, Canada. This catalog illustrates and describes the line of Jem rubber products including bathing accessories, druggists' sundries, stationers' goods, toys and balls, sporting goods, and mats.

"**Goodrich Hard Rubber Sheet, Rod, and Tubing.**" The B. F. Goodrich Rubber Co., Akron, O. This 8-page current catalog of hard rubber records the properties of the 2 grades made by the company, with suggestions for machining them, and includes the most complete tabulations of weights of hard rubber sheet, rod, and tubing. With this information the buyer may order just enough material for a given purpose and know in advance what its cost will be.

"**Windshield and Body Builders' Rubber.** Grommets, Bumpers, Tubing Etc." Rubbercraft Corp. of California, Ltd., 110-114 E. 17th St., Los Angeles, Calif. This 40-page catalog will interest those in the radio, automotive, and aeronautical industries, for it contains illustrations and descriptions of a wide range of rubber products used in body building, as well as mats and cushions, chair and crutch tips, mallets, and handle grips.

"**The Vanderbilt News.** R. T. Vanderbilt Co., 230 Park Ave., New York, N. Y. The issue, dated July-August, 1932, contains a paper on rubber vibration insulators in which their design and methods of testing are discussed and conversion charts are given. The effect of Captax and Altax on Zimate acceleration is exhibited in charts and tabulated data, and recommendations are made for the use of combinations of these accelerators. Report is made on the effect of specimen thickness on rate of artificial aging showing it to be without practical influence in oxygen bomb aging.

The means of identification and prevention of blooming of various materials are recorded in an article on blooming in superaging compounds. The use of Rodo in latex products is briefly treated, and testing procedure for comparison of odorants is given.

Book Reviews

"**International Traders' Handbook.**" 1932 Edition. The Commercial Museum, Philadelphia, Pa. Paper, 175 pages, 6 by 9 inches.

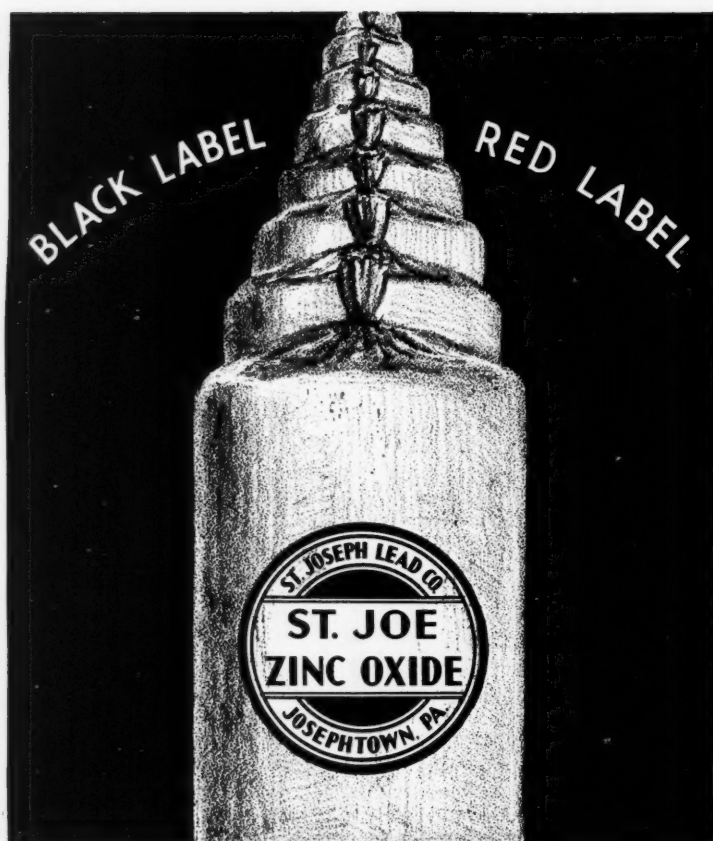
This publication is indispensable to American rubber manufacturers and all those interested in international trade. The work comprises numerous tabulations of essential data for ready reference. These include conversion tables and price comparisons, trade terms and abbreviations, commercial languages of all countries, definitions of United States terms used in export quotations, a gazetteer, regulations for exportation of merchandise by freight and parcel post, trade mark regulations, ocean shipping tables, etc.

"**Wörterbuch der Kolloidchemie.**" By Alfred Kuhn. Published by Theodor Steinkopff, Dresden, 1932. Cloth, 5 by 7½ inches, 190 pages. Illustrations and tables.

This handy little dictionary of colloid chemistry is intended for investigators in the various branches of chemistry who, while frequently meeting with colloid-chemical phenomenon, have not made a study of colloid chemistry. Among the terms listed and defined occur not only those in current usage but also such as have become obsolete. Rubber, being one of the substances considered prototypes of the colloid system, is among those receiving fuller treatment. Of special interest are the paragraphs devoted to the various types of colloid mills. The value of the work is further enhanced by numerous, clear diagrams and a bibliography.

"**Cameron Machine Types and Sizes.**" Cameron Machine Co., 61 Poplar St., Brooklyn, N. Y. This 50-page publication is a valuable handbook on slitting and winding methods as developed and applied in the score-cut system. The complete line of Camachines for different materials is illustrated and described. Among these machines are several specially designed for use in the rubber industry on dry and friction coated fabrics, rubber compound, and the like.

"**High Pressure Hydraulic Pumps.**" Bulletin 36. Baldwin-Southwark Corp., Southwark Division, Philadelphia, Pa. This bulletin covers the Southwark line of high pressure hydraulic pumps both horizontal and vertical, with a detailed description of their construction, together with tables of dimensions and capacities. A page is devoted to a description of high-pressure hand pumps, and another to the new hydro-gas accumulator hydraulic power system—a system which retains all the conveniences of the weighted accumulator and adds, furthermore, several advantages of its own.



The Preferred Zinc Oxide

In February, 1931, the St. Joseph Lead Company announced that ST. JOE Lead-Free ZINC OXIDE, produced by its patented Electro-Thermic Process, was available in commercial quantities. It has been the constant endeavor of the Company to produce Lead-Free Zinc Oxide which—at no increase in cost—would establish definitely higher standards for rubber compounds in which zinc oxide is used.

That the Company's efforts have been successful is amply confirmed by the ever-increasing number of consumers of ST. JOE ZINC OXIDE. We are pleased to refer to the leading rubber manufacturers of the United States. We invite your inquiry.

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Chicago, Ill.

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Los Angeles, Cal.

ST. JOE ZINC OXIDE

Market Reviews

CRUDE RUBBER

WHEN the government last month forecast a smaller cotton crop than was expected, impetus was given to speculators in all commodity markets including rubber. With no actual basis for it, speculators succeeded in raising the price of rubber to over 5¢ in the March contract.

This month the government estimate was higher than was expected; so part of the inflated rise was lost. That this result was not wholly unfavorable is obvious. H. Hentz & Co.'s monthly report commented as follows:

"It would probably be better for the statistical position of the commodity to have the price continue at around the present low levels (March 4.00 and July 4.20) without sharp advances as such advances only encourage producers in the East and postpone the natural correction in the ratio of production to consumption. However, fluctuations will probably continue to be influenced by the action of securities until the rubber position itself is sufficiently strong to prevail over outside factors."

The low rate of consumption is due largely to the curtailed activities in the automobile field. The August figure was about 89,855 units, 53% below the same month last year. It has been estimated, however, that September production, usually less than that for August, will be about 95,000 units, a reversal of the seasonal trend.

Tire and tube manufacturers were more optimistic when it was announced that prices would be raised from 10 to 15%. It was generally believed that the increase would be accepted because the mail order houses and Firestone, who had refused to comply with the last attempt to increase prices, were in line this time.

The Outside Market experienced a little business early in the month from small and medium-sized factories who rushed in to buy before prices went higher, but this activity slowed down later.

Each time prices go up, some increase occurs over the hand-to-mouth buying by a number of small firms, but the large companies have not been very active in the market for a long time since they have large supplies on hand, and the low rate

RUBBER BEAR POINTS

1. Consumption of rubber in August was only 22,372 tons against 28,272 in July, 1932, and 27,856 in July, 1931.
2. Rubber imports in the United States for August were 34,219 tons against 31,075 in July, 1932, and 38,379 in July, 1931.
3. Stocks on hand on August 31 were 357,342 tons against 345,927 in July and 240,816 at the same time last year.
4. Shipments of pneumatic casings in July were 76.8% under June and 56% below July last year; production dropped 35.9% under June and 28.6% under July, 1931.
5. Malayan shipments in August were 39,337 tons and for September are estimated at 40,000 tons, on slight decreases from recent months.
6. Ceylon shipments for August totaled 5,585 tons against 3,121 in July, 1932, and 3,756 in August, 1931.
7. Far Eastern production in August totaled 36,408 tons against 35,356 in July and 36,047 in August last year; estate stocks were 19,618 tons, compared with 20,591 on July 31; and dealers' stocks were 22,356 tons against 21,008 on July 31.
8. Eight months' output of automobiles was 1,119,558 units against 2,063,478 in the 1931 period.

RUBBER BULL POINTS

1. Tire and tube prices were increased from 10 to 15%.
2. Stocks on hand in the United Kingdom on August 31 were 105,062 tons, against 106,085 tons in July, 1932, and 137,184 in August, 1931.
3. September automobile production is estimated to be greater than in August, contrary to the usual seasonal trend.
4. Approximately 31% of last year's total tappable area in the Dutch East Indies is out of production.
5. Pneumatic casings on hand July 31 were 34.1% above those of June 30, but 37.5% less than on July 31, 1931.
6. Native production in Java and Sumatra is said to be 44% below normal for the past year.

of consumption shows how slowly these are being used up.

The opinion seems to be that if prices do not rise too rapidly or if they are accompanied by a sustaining rise in the level of business activity, improvement will gradually come about. Low prices will discourage overproduction and emphasize the trend for lower output now manifest in the Dutch Indies and Java and Sumatra.

Week ended September 3. August business on the Rubber Exchange was the highest since March, 1929, and the trading on the last 3 days was a fitting climax. Both on Monday and Tuesday transactions were over 6,500 tons and on Wednesday, 4,390 tons.

Buying orders accumulated over the week-end, and on Monday morning a bull-

ish demonstration resulted not only in the unusual sales mentioned, but prices gained from 47 to 59 points, carrying future positions over 5¢. A slight gain was scored on Tuesday, but profit taking came on Wednesday, and the market recovered on Friday just before the 3-day holiday.

For the week, gains were from 28 to 32 points. September contracts closed at 4.16¢ against 3.85¢ the week before; December 4.35 against 4.07; January 4.43 against 4.14; March 4.59 against 4.28; and July 4.80 against 4.48.

The rise, of course, resulted from speculative activity. Its effect is shown in the figures summarizing transactions in August. Trading amounted to 61,930 long tons compared with only 13,120 tons in July and 17,897 in August last year.

Commission house buying and selling for speculative account was prominent in the Outside Market. Prices fluctuated widely between the bulls and the bears, but for the week a slight gain was made. The Far East was reported to be selling, and foreign markets were firmer. At the week-end the tone was much steadier than it had been on previous days. The large shipments from Malaya and Ceylon dampened the ardor of the bulls, and the bears emphasized the figures, pointing out that no justification for the rise could be found in recent statistics.

The September position closed at 4¼¢ compared with 4¢ the previous week; October-December 4⅞¢ against 4½¢; and January-March 4½¢ against 4¼¢.

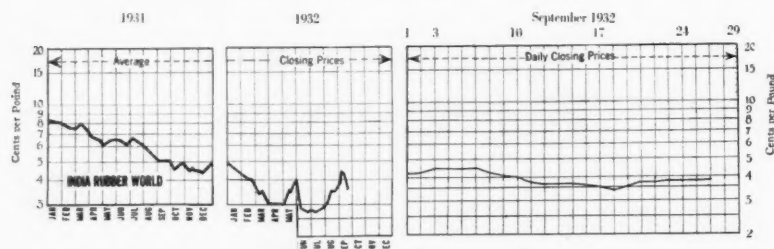
Week ended September 10. The pre-holiday firmness of last week was carried over into the market on Tuesday with gains of 24 to 26 points that raised the old March contracts to 5.10¢, but that was the only gain registered for the week. Cables from primary centers were bearish; commission houses began to sell, and the sharp drop in cotton and stocks on Thursday enhanced the decline.

Compared with last Saturday, prices were from 31 to 37 points lower. October contracts closed at 3.90¢ compared with 4.22¢ the week before; December 4.02 against 4.35; January 4.10 against 4.43;

New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	August, 1932												September, 1932												
	29	30	31		1	2	3	5*	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	24
Ribbed Smoked Sheet	4½	4½	4½		4½	4½	4½	4½	...	4½	4½	4½	4½	4	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½
No. 1 Thin Latex Crepe	5½	5½	4½		4½	4½	4½	5	5½	5½	4½	4½	4	4	4½	4½	4½	4½	4	4	4½	4½	4½	4½	4½
No. 1 Thick Latex Crepe	5½	5½	4½		4½	4½	4½	5	5½	5½	4½	4½	4½	4½	4½	4½	4½	4½	4	4	4½	4½	4½	4½	4½
No. 1 Brown Crepe	4½	4½	4½		4½	4½	4½	4½	...	4½	4½	4½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½
No. 2 Brown Crepe	4½	4½	4½		3½	4	4½	4	4½	4½	4	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½
No. 2 Amber	4½	4½	4½		4½	4½	4½	4½	4½	4½	4½	4½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½
No. 3 Amber	4½	4½	4½		4½	4½	4½	4½	4½	4½	4½	4½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½
No. 4 Amber	4½	4½	4½		3½	3½	3½	3½	4	4½	4½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½
Rolled Brown	3½	3½	3½		3½	3½	3½	3½	...	3½	3½	3½	2½	2½	3	3	3	2½	2½	2½	2½	2½	2½	2½	2½

*Holiday.



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

March 4.26 against 4.59; May 4.35 against 4.70; and July 4.43 against 4.80.

While statistics taken as a whole are gradually showing a trend in the direction of reduced production, and predictions for a better rate of consumption are heard, immediate figures in some instances are disappointing.

In the last week, for instance, private estimates put August consumption of crude rubber in this country at only 21,000 tons. In July actual consumption was 28,272 tons and in August, 1931, it was 27,586 tons.

Then cables announced that dealers' stocks in the Far East at the end of August were 24,178 tons against 20,026 tons at the end of July. Harbor Board stocks dropped to 3,917 tons from 4,408 in July.

An indication of how lessened production has been effected in some territories was shown in a cable from Batavia which said that in the last year output by native growers was 44% below normal, or 50,000 tons instead of a usual 90,000 tons, while output by European growers has been cut only 1%.

In the Outside Market prices eased off in a quiet market, made up largely of speculative operations. At the close on Saturday prices in the September contract were quoted at 4¢ against 4½¢ the week previous; October-December 4 against 4½; and January-March 4½ against 4½.

Little factory buying was evident. Most of the transactions were on account of speculators. An estimate that British stocks would drop about 700 tons received little attention in the market. The main concern is whether the recent advance in stocks and commodities will be sustained by a rise in business.

Week ended September 17. The rubber market was lower for the week under the influence of speculative selling and weakness in stocks and commodities. The consumption report for August was disappointing, too, although prices showed a gain on the day they were issued. The largest losses were on Monday and Saturday, the first a result of weakness in the stock and commodity markets, the latter a result of speculative selling.

At the close prices were from 48 to 55 points lower than at the end of the previous week. The September contract sold at 3.36¢ compared with 3.85¢ the week before; October 3.42 against 3.90; December 3.52 against 4.02; January 3.59 against 4.10; March 3.71 against 4.26; May 3.80 against 4.35; and July 3.90 against 4.43.

Several favorable factors were reported

during the week though they had no influence marketwise. British stocks were lower than anticipated; a cable for the Dutch East Indies indicated that 31% of last year's tappable area was out of production, with tapping completely abandoned on 450 estates and partially abandoned on 111 estates; and tire prices were advanced 10 to 15%.

The August consumption report, however, made a poor showing, being only 22,372 long tons, a drop of 20.9% from the 28,272 long tons consumed in July. August imports were 34,219 long tons, a gain of 10.1% over those of July, but 10.8% less than August a year ago.

Domestic stocks increased 3.3% during August to 357,342 long tons, 48.4% above the stocks on August 31, 1931. Crude rubber afloat was put at 42,846 long tons against 37,894 on July 31, 1932, and 38,370 on August 31, 1931.

Outside Market prices sold off for the week under the pressure of speculative selling. While activity has increased in the last month, actual sales were small,

evidenced by the consumption figures. The buying and selling has largely been by speculators, and this week the sellers took the upper hand.

The tone was quiet, with only a small amount of business from the small and medium sized manufacturers. The October-December contract sold at 3½¢ against 4¢ the week before; January-March 3½ against 4½; April-June 3½ against 4½.

Week ended September 24. Statistics appearing in the market in the last week were not favorable for an advance, but under the influence of a rise in the stock and commodity markets speculators were able to push the market up for a good gain on Tuesday, which was held for the week. Week-end selling pressure was negligible; so the market ended stronger.

Gains for the week were from 35 to 46 points. October sold at 3.77¢, compared with 3.42¢ last week; December 3.9¢ against 3.52; January 4.03 against 3.59; March 4.17 against 3.71; May 4.24 against 3.80; and July 4.33 against 3.90.

The week started badly when it was known that stocks at London and Liverpool had not decreased so much as expected and that Malayan stocks would probably be higher. September Malayan shipments were put at 40,000 tons.

It was also revealed that far eastern production had increased in August to 36,408 tons against 35,356 tons in July. Small estate production was 16,124 tons, against 14,736 tons in July and 15,106 tons in August, 1931. Large estate production was 20,284 tons, against 20,620 in July, and 20,941 in August last year. Estate stocks were 19,618 tons on August 31, compared with 20,591 tons on July 30. Dealers' (Continued on page 76)

New York Quotations

New York outside market rubber quotations in cents per pound

	Sept. 26, 1931	Aug. 26, 1932	Sept. 26, 1932		Sept. 26, 1931	Aug. 26, 1932	Sept. 26, 1932
Plantations				CAUCHO			
Rubber latex...gal. 75		51	51	Upper ball	4½	4½	4
Sheet				Upper ball	5½	5½	5½
Ribbed, smoked, spot	4½/5	4 3/4	3½/4	Lower ball	4	4	4
Oct.-Dec.	5/5½	4½	4	Manicobas			
Jan.-Mar.	5¼/5½	4½	4½	Manicoba, 30% guar. †	4	4½	4½
Apr.-June	5¼/5½	4½	4½/4½	Mangabiera, thin sheet	4	4½	4½
CREPE				Guayule			
No. 1 thin latex, spot	5¼/5½	4½	4½	Duro, washed and dried	14	12	12
Oct.-Dec.	5¼/5½	4½	4½/4½	Ampar	15	13	13
Jan.-Mar.	5¼/5½	4½	4½/4½	Africans			
Apr.-June	5¼/5½	4½	4½	Rio Nuñez		4½	4½
No. 2 Amber, spot	4½/4½	3½/3½	3½/3½	Black Kassai		4½	4½
Oct.-Dec.	4½/4½	3½	3½	Manihot cuttings		4	4
Jan.-Mar.	4½/5	4½	3½	Prime Niger flake		15	15
Apr.-June	5/5½	4½	4½	Acraa flake			
No. 3 Amber, spot	4½/4½	3½	3½	Gutta Percha			
Oct.-Dec.	4½/4½	3½/3½	3½/3½	Gutta Siak	10½	6½	6½
Jan.-Mar.	4½/4½	3½/3½	3½/3½	Gutta Soh	20	12	13
Apr.-June	4½/4½	3½/3½	3½/3½	Red Macassar	2.00	1.50	1.50
PONTIANAK				Balata			
Bandjermasin	7	5	5	Block, Ciudad			
Pressed block	7½	7	6½	Bolivar	26	17	16
Sarawak	7	5	5	Manaos block	26	17	18
PARAS				Surinam sheet	50	28	28
Upriver fine	5¼	7¼	7¼	Amber	52	30	30
Upriver fine	*10	*10½	*10½				
Upriver coarse	5	4½	4				
Upriver coarse	5½	*5½	*5½				
Islands fine	5½	6½	6½				
Islands fine	9½	*10	*10				
Acra, Bolivian, fine	6½	7½	7½				
Acra, Bolivian, fine	*10½	*10½	*11				
Beni, Bolivian	6½	7½	7½				
Madeira, fine	5½	7¼	7¼				

*Washed and dried crepe. Shipments from Brazil. †Nominal.

RUBBER SCRAP

WITH the dull summer months out of the way, and influenced by the rise in commodity prices, particularly crude rubber and cotton, the scrap market faces a much better outlook than it has for several months. Consumption has increased but the volume is negligible.

Prices are either unchanged, or higher in several instances, with only one grade showing lower quotations than at the end of August. Speculative effort has raised crude rubber prices substantially upward; and if the gains can be held, the result will naturally be felt in the scrap market.

BOOTS AND SHOES. Collections of this grade are light, as they have been for the last few months. The extremely low prices hardly pay for gathering this scrap. Prices were unchanged at the levels of last month.

INNER TUBES. Export business on inner tubes seems to enjoy an edge over domestic business, since for the last 6 months or more the export demand for tubes has been particularly good. Under this stimulus prices for the No. 2 and Red tubes were raised fractionally.

TIRES. An increase of 50¢ a ton in the Akron District was scored by quotations of mixed auto tires with beads, and a little more by beadless. Solid clean mixed truck tires, probably because of their scarcity, advanced by \$3.50/\$3.00 a ton. Pneumatics have replaced solids in most cases, and the few solids to be found are in demand. Inquiry for tires was much better than it was during August. Automobile manufacturers are planning on even greater production next month.

MECHANICALS. For the fourth month mechanical prices did not change. This market was dull.

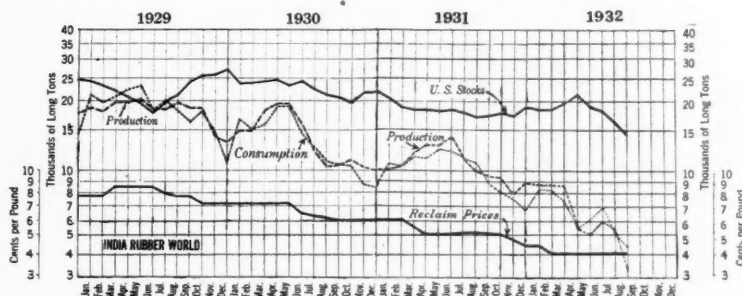
HARD RUBBER. The only decline, only ¼¢, in prices of scrap rubber for September was registered by this grade.

CONSUMERS' BUYING PRICES

Carload Lots Delivered Eastern Mills
September 26, 1932

Boots and Shoes		Prices
Boots and shoes, black.....	100 lb.	\$0.75/\$0.90
Colored.....	100 lb.	.625/.75
Untrimmed arctics.....	100 lb.	.50
Inner Tubes		
No. 1, floating.....	lb.	.02¾/.03
No. 2, compound.....	lb.	.01¾/.01½
Red.....	lb.	.01¾/.01¾
Mixed tubes.....	lb.	.01¾
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with		
beads.....	ton	7.75/8.00
Beadless.....	ton	11.25/11.50
Auto tire carcass.....	ton	8.00/9.00
Black auto peelings.....	ton	19.00/19.50
Solid		
Clean mixed truck.....	ton	26.50/27.00
Light gravity.....	ton	28.00/29.00
Mechanicals		
Mixed black scrap.....	lb.	.00¾/.00¾
Hose, air brake.....	ton	7.50/8.00
Garden, rubber covered.....	lb.	.00¾/.00¾
Steam and water, soft.....	lb.	.00¾/.00¾
No. 1 red.....	lb.	.01¾/.01¾
No. 2 red.....	lb.	.01¾/.01¾
White druggists' sundries.....	lb.	.01¾/.01¾
Mechanical.....	lb.	.00¾/.00¾
Hard Rubber		
No. 1 hard rubber.....	lb.	.06¾/.06½

RECLAIMED RUBBER



Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1930.....	157,967	153,497	41.5	24,008	9,468
1931.....	132,462	125,001	35.7	19,257	6,971
1932.....					
January.....	8,753	8,440	30.2	18,712	475
February.....	8,731	8,332	27.6	18,659	484
March.....	8,613	7,420	26.7	19,726	476
April.....	5,555	5,561	21.4	21,525	370
May.....	5,024	6,070	20.8	18,889	188
June.....	5,923	7,031	18.0	16,870	259
July.....	5,417	5,131	18.2	16,333	240
August.....	3,264	4,382	19.6	14,629	....

*Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

FOR the fourth month this year consumption of reclaimed rubber was greater than production, showing that manufacturers are not overproducing. August consumption was less than that in July, but since the crude rubber figures dropped to an even greater extent, the ratio of reclaim to crude used was 19.6 for August, compared with 18.2 for July.

Prices were not changed for the month of September but a distinctly better and more optimistic feeling now prevails in the reclaim rubber market. Prospects for the future also are good. The low stocks on hand mean that any increase in demand will be reflected in production figures. Rubber goods manufacturers are buying now who were not even thinking of it 6 weeks ago.

Reclaimers have held up bravely in the trying times we have been through. Manufacturers at first thought that they could save money by using crude rubber when it went below the price of reclaim. Now these same firms are back in the market. They have found that crude requires from 2 to 3 times longer than reclaim to break down; it increases heat; the compound scorches easily and does not tube or calender so well as when containing reclaim. It is now generally realized that reclaim is not an adulterant, but a necessary adjunct in rubber compounding, and its worth has been proved by scientific tests. The finished product is much more uniform with reclaim, and manufacturers who switched to all crude in compounding have realized their mistake. Reclaim is now in the same class as mineral rubber, carbon black, and zinc oxide, in its effect

on the finished product. The success with which reclaim has weathered the severe test forced upon it by low prices proves beyond doubt that it has a definite place in rubber compounding.

The summer months naturally are dull. The low rate of activity at Detroit affected the accessory manufacturers, but with a promise of increased output at the producing center, these dealers face a brighter outlook. Volume wire makers are experiencing a slow time, but those who make specialties are in many cases finding a good market. A recent advance in prices of wire has steadied the market a bit. With raw material prices steadier, it is expected that reclaim prices will do better in the next few months.

New York Quotations

September 26, 1932

	Spec. Grav.	Cents per Lb.
High Tensile		
Super-reclaim, black.....	1.20	5 5/8
red.....	1.20	4 3/4
Auto Tire		
Black.....	1.21	3 3/4
Black selected tires.....	1.18	4 1/4
Dark gray.....	1.35	5 5/8
White.....	1.40	6 1/2
Shoe		
Unwashed.....	1.60	4 3/4
Washed.....	1.50	5 1/2
Tube		
No. 1.....	1.00	6 1/2
No. 2.....	1.10	4 1/4
Truck Tire		
Truck tire, heavy gravity.....	1.55	5 5/8
Truck tire, light gravity.....	1.40	5 1/4
Miscellaneous		
Mechanical blends.....	1.60	3 3/4



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41 EAST 42ND STREET, NEW YORK, N. Y.

COMPOUNDING INGREDIENTS

THE large tire plants in Akron operated last month at a very slow pace. Some were on a 3-day week; while others about the middle of the month were closed down entirely. Activity in other branches of the rubber industry was proportionately sluggish. This condition is reflected in the hand-to-mouth demand for compounding ingredients in general.

As a rule prices were steady and unchanged except in 3 instances. Included in these changes was an advance of $\frac{1}{4}\phi$ per pound effective August 26 for commercial grades of litharge in casks, bringing the

price to 6ϕ a pound. This advance was due to an increase in the price of pig lead.

The other price changes were reductions. Barium base titanium pigment was lowered the last week in August $\frac{3}{4}\phi$ a pound. The mid-continental refineries, known as Group 3, lowered petroleum rubber solvent $\frac{1}{4}\phi$ a gallon to $5\frac{3}{4}\phi$ for tank cars. This reduction was the first on this material since last June. Prices in the East Coast market were unchanged at 12ϕ a gallon in tank cars.

Wetting agents are familiar in textile dyeing and finishing processes. Their func-

tion is to eliminate the surface tension of the fibers, thereby allowing them to be wetted promptly and freely by watery solutions. Need of such agents in the rubber industry occurs in connection with the addition of dry powders to latex. Two wetting agents meeting with favor in this connection are Aquarex and Nekal BX.

A new accelerator, Tetrone A, is offered for vulcanizing rubber without the addition of sulphur.

Sales of factice are holding up fairly well and are improving despite the low price of crude rubber.

New York Quotations

September 26, 1932

Prices Not Reported Will Be Supplied on Application

Abrasives		
Pumicestone, pwd.	lb.	\$0.02 $\frac{3}{4}$ / \$0.04
Rottenstone, domestic	ton	23.50 / 28.00
Accelerators, Inorganic		
Lime, hydrated	ton	20.00
Litharge, com., pwd.	casks, lb.	.06
Magnesia, calcined, heavy	lb.	.04 $\frac{1}{2}$
carbonate	lb.	.05 $\frac{3}{4}$ / .06
Accelerators, Organic		
Accelerator 49	lb.	.38 / .48
Aldehyde ammonia	lb.	.65 / .70
Altax	lb.	
Barak	lb.	
BLE	lb.	
Butene	lb.	
Captax	lb.	
Crylene	lb.	
paste	lb.	
DBA	lb.	
Di-esterex N.	lb.	
DOTG	lb.	.42 / .52
DPG	lb.	.33 / .43
Ethylidine aniline	lb.	.45 / .47 $\frac{1}{4}$
Formaldehyde aniline	lb.	.37 $\frac{1}{2}$ / .40
Grasselerator 808	lb.	
833	lb.	
Heptene	lb.	
base	lb.	
Hexamethylenetetramine	lb.	.46
Hydron	lb.	
Lead oleate, No. 999	lb.	.118
Witco	lb.	.10
Lithex	lb.	
Methylene dianiline	lb.	
Monex	lb.	
Novex	lb.	
Plastone	lb.	
R & H 40	lb.	
50	lb.	
50-D	lb.	
397	lb.	
Safex	lb.	
Super-sulphur No. 1	lb.	
No. 2	lb.	
Tensilac 39	lb.	.40 / .42 $\frac{1}{2}$
Tetrone A	lb.	
Thermlo F	lb.	
Thiocarbamilid	lb.	.25 / .27
Thionex	lb.	
TMTT	lb.	
Trimene	lb.	
base	lb.	
Triphenyl guanidine	lb.	.58 / .60
Tuads	lb.	
Vulcanex	lb.	
ZBX	lb.	
Zimate	lb.	
Acids		
Acetic 28% (bbls.)	100 lbs.	2.65 / 2.90
glacial (carboys)	100 lbs.	9.64 / 9.89
Sulphuric, 66 $\frac{1}{2}$	ton	15.50
Age Resisters		
Age-Rite Gel	lb.	
powder	lb.	
resin	lb.	
white	lb.	
Albasan	lb.	
Antox	lb.	
Permalux	lb.	
VGB	lb.	
Zalba	lb.	
Antiscorch Materials		
UTB	lb.	
Antisun Materials		
Heliozone	lb.	
Sunproof	lb.	

Binders, Fibrous

Cotton flock, dark	lb.	\$0.08 $\frac{1}{2}$ / \$0.10
dyed	lb.	.50 / .85
white	lb.	.11 / .16
Rayon flock, white	lb.	1.40
colored	lb.	1.75

Colloidal Ingredients

Catalpo	ton	35.00 / 60.00
Collway sulphur (dry basis)	lb.	.25

Colors

BLACK

Bone, powdered	lb.	.05 $\frac{1}{4}$ / .15
Drop	lb.	.05 $\frac{1}{2}$ / .17
Lampblack (commercial)	lb.	.06 / .08

BLUE

Blue toners	lb.	.80 / 3.50
Prussian	lb.	.35 / .37
Ultramarine	lb.	.06 / .30

BROWN

Mapico	lb.	.14 / .15
Sienna, Italian, raw, pwd.	lb.	.04 $\frac{1}{2}$ / .11

GREEN

Chrome, light	lb.	.23 / .25 $\frac{1}{2}$
medium	lb.	.26 / .27 $\frac{1}{2}$
Chrome oxide	lb.	.19 / .21
Green toners	lb.	.85 / 3.50

ORANGE

Cadmium sulphide	lb.	
Orange toners	lb.	.40 / 1.60

ORCHID

Orchid toners	lb.	1.50 / 2.00
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PINK

Pink toners	lb.	1.50 / 4.00
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PURPLE

Purple toners	lb.	.60 / 2.00
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RED

Antimony		
Crimson, R. M. P. No. 3	lb.	.48
Sulphur free	lb.	.52
7-A	lb.	.35
Z-2	lb.	.20
Iron Oxides		
Rub-er-red	lb.	.08 $\frac{1}{4}$
Mapico	lb.	.08 $\frac{1}{4}$ / .09
Red toners	lb.	.80 / 2.00

WHITE

Lithopone	lb.	.04 $\frac{1}{2}$ / .05
Albalith	lb.	.04 $\frac{1}{2}$ / .04 $\frac{3}{4}$
Cryptone No. 19	lb.	.06 / .06 $\frac{1}{4}$
CB No. 21	lb.	.06 / .06 $\frac{1}{4}$
Grasselli	lb.	.04 $\frac{1}{2}$ / .05
Titanium oxide, pure	lb.	.17 $\frac{1}{2}$ / .19 $\frac{1}{4}$
Titanox "B"	lb.	.06 / .06 $\frac{1}{2}$
"C"	lb.	.06 / .06 $\frac{1}{2}$
Zinc Oxide		
Black label (lead free)	lb.	.05 $\frac{1}{4}$
F. P. Florence, green		
seal	lb.	.09 $\frac{1}{4}$ / .09 $\frac{1}{2}$
red seal	lb.	.08 $\frac{1}{4}$ / .08 $\frac{1}{2}$
white seal (bbbs.)	lb.	.10 $\frac{1}{4}$
Green label (lead free)	lb.	.05 $\frac{1}{4}$
Green seal, Anaconda	lb.	.09 $\frac{1}{4}$ / .10 $\frac{1}{4}$
Horsehead (lead free) brand		
Selected	lb.	.05 $\frac{1}{4}$ / .06
Special	lb.	.05 $\frac{1}{4}$ / .06
XX	lb.	.05 $\frac{1}{4}$ / .06
green	lb.	.05 $\frac{1}{4}$ / .06
red	lb.	.05 $\frac{1}{4}$ / .06
Kadox, black label	lb.	.09 $\frac{1}{4}$ / .09 $\frac{1}{2}$
blue label	lb.	.08 $\frac{1}{4}$ / .08 $\frac{1}{2}$
red label	lb.	.07 $\frac{1}{4}$ / .07 $\frac{1}{2}$

Lehigh (lead)	lb.	\$0.0490 / \$0.0515
Red label (lead free)	lb.	.05 $\frac{1}{4}$
Red seal, Anaconda	lb.	.08 $\frac{1}{4}$ / .09 $\frac{1}{4}$
Standard (lead)	lb.	.05 $\frac{1}{4}$ / .05 $\frac{3}{4}$
Sterling (lead)	lb.	.05 $\frac{1}{4}$ / .05 $\frac{3}{4}$
Superior (lead)	lb.	.05 $\frac{1}{4}$ / .05 $\frac{3}{4}$
U. S. P. (bbbs.)	lb.	.12 $\frac{1}{4}$
White seal, Anaconda	lb.	.10 $\frac{1}{4}$ / .11 $\frac{1}{4}$
Y. zinc sulphide (bbbs.)	lb.	.13

YELLOW

Chrome	lb.	.16
Mapico	lb.	.11 / .12
Ochre, domestic	lb.	.01 $\frac{1}{4}$ / .02 $\frac{1}{4}$
Yellow toners	lb.	2.50

Deodorant

Rodo

Factice—See Rubber Substitutes

Fillers, Inert

Asbestine	ton	
Barytes (f.o.b. St. Louis)	ton	23.00
Blanc fixe, dry, precip.	ton	70.00 / 75.00
pulp	ton	42.50 / 45.00
Kalite No. 1	ton	30.00 / 35.00
No. 3	ton	40.00 / 65.00
Suprex white, extra light	ton	60.00 / 80.00
heavy	ton	45.00 / 55.00
Whiting		
Chalk, precipitated	lb.	.03 $\frac{1}{2}$ / .04
Domestic	100 lbs.	1.00
Sussex	ton	
Witco	ton	20.00

Fillers for Pliability

Flex	lb.	
Fumonex	lb.	.02 $\frac{1}{4}$ / .06
P-33	lb.	
Thermax	lb.	
Velvetex	lb.	.02 / .05

Finishes

Mica, amber	lb.	.04
Starch, corn, pwd.	100 lbs.	2.44 / 2.64
Talc, dusting	ton	20.00
Pyrax A	ton	

Mineral Rubber

Genasco (fact'y)	ton	40.00 / 42.00
Gilsonite (fact'y)	ton	37.34 / 39.65
Granulated M. R.	ton	
Hydrocarbon, hard	ton	
Parm Grade 1	ton	23.00 / 28.00
Grade 2	ton	23.00 / 28.00

Mold Lubricants

Sericite	lb.	
Soapbark (cut)	lb.	.06 $\frac{1}{4}$ / .06 $\frac{3}{4}$
Soapstone	ton	15.00

Oils

Castor, blown	lb.	.11 $\frac{1}{4}$
Poppy seed oil	gal.	1.60
Red oil, distilled (bbbs.)	lb.	.06 $\frac{1}{4}$ / .07 $\frac{1}{4}$

Protective Colloids

Casein, domestic	lb.	.06 / .06 $\frac{1}{2}$
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Reinforcers

Aluminum flake	ton	
Carbon Black		
Aeroflot arrow black	lb.	.02 $\frac{3}{4}$
Arrow specification black	lb.	.03
Century (works, c. l.)	lb.	.02 $\frac{3}{4}$
Certified Cabot, c. l.		
f. o. b. works, bags	lb.	.0272
c. l., f. o. b. works,		
cases	lb.	.04 $\frac{1}{4}$
l. c. l., f. o. b. works	lb.	.04 $\frac{1}{4}$
Disperso (works, c. l.)	lb.	.02 $\frac{3}{4}$
Dixie brand	lb.	.02 $\frac{3}{4}$ / .06 $\frac{1}{4}$
Elastex	lb.	.03 $\frac{1}{4}$ / .03

Gastex (f. o. b. fact'y).....lb.	\$0.02 1/4 / \$0.06
Kosmos brand	ib. .02 3/4 / .06 1/2
Micronex	ib. .03 / .05
Ordinary (compressed or uncompressed)	ib. .02 3/4 / .07
Clays	
Blue Ridge, dark	ton 7.50
Dixie	ton
Langford	ton
Par	ton
Perfection	ton 8.00 / 20.00
Standard	ton 7.50
Suprex No. 1	ton 8.00
No. 2, dark	ton 6.50
Glue, high grade	lb. .15 / .22
Rubber Substitutes or Factice	
Amberex	lb. .15
Black	ib. .06 / .08
Brown	ib. .06 / .11
White	ib. .08 / .12 1/2
Softeners	
Burgundy pitch	lb. .05
Degras	ib. .02 3/4 / .03 1/2
Fluxol	ton 18.00 / 80.00
Palm oil (Witco)	ib. .08
Petrolatum, light amber	ib. .02 3/4 / .02 1/2
Plastogen	ib. .08 / .12
Rosin oil, compounded	gal. .30
Rubberseed, drums	ib. .10
Rubtack	ib. .10
Tonox	ib. .10
Witco Flux	gal. .20
Solvents	
Benzol (90% drums)	gal. .25
Bondogen	gal. 1.50
Carbon bisulphide (drums)	lb. .05 1/2 / .12
tetrachloride	ib. .06 1/4 / .07
Dependip	gal.
Dip-Sol	gal.
Dryolene, No. 9	gal.
Petrolbenzol	gal.
Rub-Sol	gal.
Solvent naphtha 284	gal.
Stod-Sol	gal.
Troluol	gal.
Turpentine, dest. distilled	gal. .35
Stabilizers for Cure	
Laurex, ton lots	lb.
Stearax B	lb. .07 / .09
flake	ib. .06 1/2 / .08
Stearic acid, dbl. pres'd	lb. .08 / .12
Vulcanizing Ingredients	
Rubber sulphur	100 lbs. 1.85 / 2.20
Sulphur chloride, drums	lb. .03 1/2 / .04
Telly	lb.
Vandex	lb.
(See also Colors—Antimony)	
Wetting Agents	
Aquarex	lb.
Nekal HX (dry)	lb. .65 / .75

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	COMMODITY	CITY AND COUNTRY
*869	Rubber waste and vir-San Jose, Costa gin rubber	Rica
*898	Tires	Panamari, Surinam
*900	Sponge rubber products	Montreal, Canada
*901	Reconditioned tires	Tenerife, Canary Islands
*902	Tires and inner tubes	Tenerife, Canary Islands
*903	Surgical and medicinal The Hague, goods and rubber bands	Netherlands
*951	Belting	Kampala, East Africa
*952	Bicycle tires and inner tubes, hot water bottles, and household gloves	Lodz, Poland
*953	Bags	Enschede, Nether- lands
*990	Erasers	Cebu, Philippine Islands
*997	Druggists' sundries	Outremont, Can- ada
*1,026	Hospital and surgicals	San Juan, Porto Rico
*1,042	Bathing caps and shoes	Rome, Italy
*1,063	Tires	Magdeburg, Ger- many
*1,090	Transmission and con-Buenos Aires, Ar- veyer belts	gentina
*1,103	Bathing caps, shoes, beach bags, and sea toys	Alexandria, Egypt
*1,134	Stationers' rubber hands	Bangkok, Siam

*Purchase. †Agency. *†Purchase and agency.
‡Either.

Tire Production Statistics

Pneumatic Casings—All Types				Solid and Cushion Tires			
	In- ventory	Produc- tion	Total Shipments		In- ventory	Produc- tion	Total Shipments
1929	9,470,368	54,980,672	55,515,884	1929	122,200	407,347	436,027
1930	7,202,750	40,772,378	42,913,108	1930	75,871	204,340	250,635
1931	6,219,776	38,992,220	40,048,552	1931	38,815	136,261	167,555
1932				1932			
Jan.	6,329,417	2,769,988	2,602,469	Jan.	37,327	8,522	9,488
Feb.	7,337,796	3,096,976	2,042,289	Feb.	37,242	9,754	9,541
Mar.	7,902,258	2,936,872	2,363,232	Mar.	36,811	8,796	9,205
Apr.	7,876,656	2,813,489	2,958,104	Apr.	35,816	7,980	8,436
May	7,502,953	3,056,050	3,406,493	May	35,179	8,026	8,405
June	3,700,017	4,514,663	8,293,312	June	22,988	11,170	22,474
July	4,962,285	2,893,463	1,923,276	July	25,218	9,655	7,104
Inner Tubes—All Types				Cotton and Rubber Con- sumption Casings, Tubes, Solid and Cushion Tires			
	In- ventory	Produc- tion	Total Shipments		Cotton Fabric Pounds	Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1929	10,245,365	55,062,886	56,473,303	1929	208,824,653	598,994,708	14,748,552,000
1930	7,999,477	41,936,029	43,952,139	1930	158,812,462	476,755,707	16,200,894,000
1931	6,337,570	38,666,376	40,017,175	1931	151,143,715	456,615,128	16,941,750,000
1932				1932			
Jan.	6,175,055	2,718,508	2,803,369	Jan.	12,156,282	36,850,171	1,112,370,000
Feb.	7,007,567	3,056,988	2,182,405	Feb.	12,518,243	39,472,356	1,071,840,000
Mar.	7,558,177	2,801,602	2,148,899	Mar.	11,292,363	36,202,474	1,236,942,000
Apr.	7,552,674	2,379,768	2,708,186	Apr.	11,083,556	35,416,482	1,270,080,000
May	7,130,625	2,727,462	3,094,591	May	12,043,566	37,681,119	1,326,738,000
June	3,943,246	4,222,816	3,394,118	June	17,480,486	57,358,548	1,627,920,000
July	4,779,814	2,349,761	1,727,750	July	11,706,987	38,406,905	1,315,020,000

Rubber Manufacturers Association, Inc., figures representing 80% of the industry since January, 1929, with the exception of gasoline consumption.

Rubber Goods Production Statistics

		1932						1931
TIRES AND TUBES		Jan.	Feb.	Mar.	Apr.	May	June	July
Pneumatic casings								
Production	thous. of yds.	2,770	3,097	2,937	2,813	3,056	4,515	3,941
Shipments, total	thous. of yds.	2,602	2,042	2,363	2,958	3,406	8,293	4,370
Domestic	thous. of yds.	2,545	1,973	2,281	2,886	3,325	8,212	4,244
Stocks, end of month	thous. of yds.	6,329	7,338	7,902	7,877	7,503	3,700	7,936
Solid and cushion tires								
Production	thous. of yds.	9	10	9	8	8	11	13
Shipments, total	thous. of yds.	9	10	9	8	8	22	16
Domestic	thous. of yds.	9	9	9	8	8	22	15
Stocks, end of month	thous. of yds.	37	37	37	36	35	23	55
Inner tubes								
Production	thous. of yds.	2,719	3,057	2,802	2,580	2,727	4,223	3,964
Shipments, total	thous. of yds.	2,803	2,182	2,149	2,708	3,094	7,394	4,665
Domestic	thous. of yds.	2,761	2,135	2,094	2,658	3,035	7,336	4,569
Stocks, end of month	thous. of yds.	6,175	7,008	7,008	7,553	7,131	3,943	7,672
Raw material consumed								
Fabrics	thous. of lbs.	12,156	12,518	11,292	11,084	12,045	17,480	15,140
MISCELLANEOUS PRODUCTS								
Rubber bands, shipments	thous. of lbs.	206	208	223	202	187	....	246
Rubber clothing, calendar								
Orders, net	no. coats and sundries	20,720	12,388	13,970	7,303	12,503	10,433	17,932
Production	no. coats and sundries	10,130	20,405	17,649	9,711	12,886	15,333	14,431
Rubber-proofed fabrics, production, total								
Auto fabrics	thous. of yds.	2,184	2,448	2,462	2,092	1,748	2,243	3,337
Raincoat fabrics	thous. of yds.	339	233	312	202	197	308	531
Rubber flooring, shipments	thous. of sq. ft.	853	883	754	701	556	744	1,843
Rubber and canvas footwear								
Production, total	thous. of pairs	3,557	3,777	3,787	4,104	4,518	4,429	2,407
Tennis	thous. of pairs	2,496	3,226	3,187	3,446	3,485	2,898	836
Waterproof	thous. of pairs	1,061	552	600	657	1,033	1,531	1,570
Shipments, total	thous. of pairs	3,990	4,454	4,998	5,073	5,049	4,345	3,272
Tennis	thous. of pairs	2,374	3,411	4,264	4,374	4,603	3,839	1,645
Waterproof	thous. of pairs	1,616	1,043	735	698	446	506	1,627
Shipments, domestic, total	thous. of pairs	3,962	4,416	4,943	5,010	4,966	4,285	3,030
Tennis	thous. of pairs	2,353	3,378	4,216	4,333	4,530	3,786	1,520
Waterproof	thous. of pairs	1,610	1,038	727	677	436	499	1,510
Stocks, total, end of month	thous. of pairs	20,237	19,551	19,347	18,381	17,879	17,962	22,935
Tennis	thous. of pairs	8,510	8,264	8,191	7,267	6,163	5,222	5,957
Waterproof	thous. of pairs	11,726	11,287	11,156	11,115	11,716	12,741	16,978
Rubber heels								
Production	thous. of pairs	12,316	14,787	16,368	11,737	10,259	....	15,361
Shipments	thous. of pairs							
Export	thous. of pairs	290	259	305	280	275	....	540
Repair trade	thous. of pairs	3,431	4,575	3,785	2,656	3,651	....	4,058
Shoe manufacturers	thous. of pairs	8,704	8,748	9,424	6,938	6,345	....	11,177
Stocks, end of month	thous. of pairs	24,515	25,807	27,933	28,340	28,782	....	27,006
Rubber soles								
Production	thous. of pairs	3,411	3,461	3,953	2,292	2,488	....	2,864
Shipments	thous. of pairs							
Export	thous. of pairs	8	3	2	1	4	....	67
Repair trade	thous. of pairs	264	285	252	252	151	....	196
Shoe manufacturers	thous. of pairs	2,954	2,925	3,320	2,087	2,549	....	2,569
Stocks, end of month	thous. of pairs	2,085	2,428	2,691	2,759	2,434	....	2,475
Mechanical rubber goods, shipments								
Total	thous. of dollars	2,463	2,446	2,638	2,613	2,542	....	3,706
Belting	thous. of dollars	483	483	491	430	420	....	914
Hose	thous. of dollars	903	966	1,174	1,251	1,131	....	1,436
Other	thous. of dollars	1,077	997	973	932	991	....	1,356

Source: Survey of Current Business, Bureau of Foreign and Domestic Commerce, Washington, D. C.

246
123 tons

COTTON AND FABRICS

THE sharp rise in the price of raw cotton which followed the government's report on the condition of the crop as of August 1 was reversed when the September 1 report was issued. Traders almost as a whole had predicted that insects and poor weather had damaged the crop to such an extent that the August 1 figure would be much lower by September 1. Instead the government estimated a crop of 11,310,000 bales, 4,000 bales more than last month. The reason for the increase was that too much allowance had been made for abandoned acreage, which had been very small.

The drop in prices, however, was not considered altogether unfavorable. The gains last month which had carried prices close to 10¢ were altogether too rapid and much higher than the improvement in business warranted.

An immediate result of the higher prices was an unusually fine report by the cotton goods industry. Sales and shipments skyrocketed in August, showing that buyers have bare shelves and are simply waiting for definite assurance that prices will improve before stocking up. Some mills reported that they had enough business to keep them busy until the end of the year. When prices fell off, sales of cloth were affected somewhat, but September is expected to make a good showing. Cloth prices were firmer at the month-end, and with raw material prices slowly regaining ground it was felt that the increase in prices would be maintained.

The ginnings figure showed that 21% of the crop had been ginned so far. This is within the usual figures; so it caused no change in the market. The feeling is that farmers are holding this year's crop and selling cotton from the 1931 harvest. Hedging so far has not been heavy and has been well absorbed.

The weather from now on, while the crop is being brought to market, can have an important influence, but more important will be the course taken by business in general.

Week ended September 3. After last week's sharp climb in prices the reaction and the profit taking of the present week were expected. A buying wave on Monday sent the July position to 10¢ and doubled the prices registered 3 months ago, but realizing erased the gain. A mass of selling orders was dumped on the market Tuesday, sending the market downward 41 to 53 points; and the liquidation continued for 4 days with total losses of from 78 to 106 points.

On Friday the selling exhausted itself. Heavy rains and tropical storms were predicted; crop estimates were cut to lower figures, so the loss for the week was cut to from 30 to 32 points.

October closed at 8.83¢ compared with 9.14¢ last week; December 8.99 against 9.31; January 9.06 against 9.38; March 9.18 against 9.49; May 9.32 against 9.62; and July 9.42 against 9.74.

A factor that unsettled the market at

COTTON BULL POINTS

1. The cotton spinning industry operated at 72.4% capacity in August against 51.5% in July and 57.6% for June.
2. Consumption of cotton during August was 402,601 bales against 278,656 in July and 425,030 in August, 1931.
3. Exports during August were 452,154 bales against 449,476 in July and 211,030 in August, 1931.
4. Carded cotton cloth statistics for August showed a drop of 25.5% in stocks on hand; sales were 282.4% of production; and unfilled orders increased 113.1%.
5. The labor dispute in England has been settled by arbitration.
6. Exports to the Continent are far ahead of last year, offsetting a lower rate to the Orient.
7. Growers are said to be holding this year's crop.
8. The crop is showing a generally shorter staple than last year.
9. Weevil infestations are still doing much damage.

COTTON BEAR POINTS

1. A crop of 11,310,000 bales was estimated by the Department of Agriculture based on September 1 conditions, an increase of 4,000 bales over the August estimate and 500,000 bales over private figures.
2. The total supply of cotton is far in excess of consumption needs.
3. Even though the rate increased in August, consumption is still far below normal.
4. Favorable weather has prevailed generally in the last month.

Liverpool was the cotton strike at Lancashire. Of the 200,000 operatives it is said that 90% have joined the strike, and the rest would probably join. Every possible effort was being made to settle the dispute.

The dumping of the surplus Farm Board cotton which had so disturbed the market was stopped when the Board secured a loan of \$50,000,000 from the R. F. C. to enable it to hold its cotton off the market.

One of the most cheerful items, besides the crop news, was the advance in the textile industry. Production for the last week in August was the highest since April 2, with sales reported in excess of output. Prices have increased, and the Exchange says that "many mills are being forced to increase operations, and the mills have secured a backlog of orders which assures a sharp increase in the activity of the industry in the next few weeks." At Birmingham, Ala., wholesalers reported more orders than they could fill.

Week ended September 10. The government crop estimate as to the condition of the crop in September was 11,310,000 bales, 4,000 bales higher than the estimate on August 8. A sharp drop of \$5 a bale greeted the report, since traders expected that the forecast would be under that of last month. The break in prices was a signal for mills to rush in to buy the next day, and on Friday and Saturday the market recovered from 17 to 23 points of its loss.

For the week, however, prices declined from 74 to 76 points. September closed at 7.99¢ compared with 8.75¢ the week before; October 8.07 against 8.83; December 8.25 against 8.99; January 8.31 against 9.06; March 8.44 against 9.18; May 8.56 against 9.32; and July 8.65 against 9.42.

A decline in yield per acre was indicated by the government figures for the month,

but this was offset by less abandonment than was at first estimated. Only 2 states showed better prospects than the month before, Texas and Oklahoma, principally because of favorable weather. In the eastern and central belts the boll weevil was active, and the weather was not any too favorable; so crop prospects declined. But even with the increased yield in prospect, this year's output is 5,786,000 bales less than in 1931 and 3,348,000 bales less than the 5-year average.

Up to this week cotton cloth sales by domestic mills were sharply upward. The *Times'* index for the week ended September 3 stood at 96.8 compared with 88.3 for the preceding week and 93.0 for the same week last year.

In commenting on the gain in cotton sales in the last few weeks, C. T. Revere, expert economist of Munds, Winslow & Potter, said that the "... maintenance of these gains and any additions thereto must come from evidence not only that requirements for goods are huge and practically insatiable, but that the ultimate consumer is both ready and willing to translate these requirements into actual purchases."

Week ended September 17. Continuing the downward trend which started on the publication of the government crop report last week, prices were \$14 a bale below the high levels reached early in the month. A large volume of hedge selling contributed to the decline, as well as weakness in stocks and wheat. Weather reports during the week were favorable both for growth and picking, another factor which aided the decline.

For the week prices dropped from 134 to 149 points. September closed at 6.65¢ compared with 7.99¢ the week before; October 6.65 against 8.07; December 6.80 against 8.25; January 6.84 against 8.31; March 6.95 against 8.44; and May 7.09 against 8.56.

The break in raw cotton naturally affected sales of cotton cloth. The *Times'* index was 95.0 for the September 10 week compared with 96.8 the week before and 93.0 for the same week last year.

The August figures revealed the largest sales on record, showing that mills are sold ahead for many weeks. Sales were 282.4% of production; stocks declined 25.5%; unfilled orders increased 113.1%; billings were 139.7% of production.

August consumption of cotton reflected these figures. It was reported to have been 402,601 bales of lint compared with 278,656 in July and 425,030 in August of last year. Exports for August were 452,154 bales of lint against 449,475 in July and 211,030 in August of last year.

The New York Cotton Exchange Service reports, "Numerous instances of mills running day and night from the South and New England. This increased activity does not represent the making of goods for stock, but results from the exceptional wave of buying this summer at a time when stocks at the mills were low and ma-

chinery had to be restarted to fill the new demand. . . . Mill reports from the Continent continue to reflect a moderate improvement. . . . Sentiment is reported to be better in many directions."

Week ended September 24. Reversing the trend of the last 3 weeks the cotton market scored gains of better than $\frac{1}{2}\epsilon$ in the current period. Unfavorable weather in the belt, only a small amount of hedge selling, reported improvement in retail business, and better cloth sales all contributed to the advance. Liquidation cut down the increase in prices to some extent, but the tone at the week-end was strong on the lack of southern hedging.

The market was from 56 to 65 points higher than the week before. October sold at 7.30¢ compared with 6.65¢ last Saturday; December 7.43 against 6.80; January 7.50 against 6.84; March 7.56 against 6.95; May 7.64 against 7.09; and July 7.74 against 7.18.

Ginnings prior to September 16 were 2,635,530 bales, compared with 2,092,753 last year and 3,736,120 in 1930. The percentage of the crop ginned in the last 6 years in the same period has been between 12.6 to 27.4% so that these figures had little market effect. Not much change was expected in the government's forecast of 11,310,000 bales.

The Census Bureau also reported that spinning of cotton in August was approximately 50% higher than in July. The industry operated at 72.4% of capacity on a single shift basis, compared with 51.5% in July and 57.6% for June. Last August, however, the percentage was 81.6. The result of this upward surge was an increase in industrial production above the usual amount, according to the Federal Reserve Board in its monthly industrial review.

The cotton cloth index of the *Times* was at 95.2 for the September 17 week, compared with 95.0 for the preceding week and 88.1 for the same week last year. The volume of buying declined slightly last week, a natural reaction after the unusual sales in previous weeks, but it has been noticed that every rise in the price of raw cotton brings out substantial buying orders. This action is taken to mean that buyers are not overstocked and it points to a healthy statistical position.

The Manchester wage dispute was reported settled on a compromise in the wage rate as had been expected.

On September 27 middling spot cotton was 7.50¢, a gain of 15 points since Saturday's close. The total sales were 56,191 bales. Exports were 25,414 bales.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The demand for fabrics eased off following the decline in raw materials from a high of substantially 10¢ a pound for July cotton to the present lower levels. The market experience of the past few weeks subsequent to the Bureau of Census report of August 8 clearly demonstrated a shortage of supplies in the hands of jobbers and consumers of cotton textiles. The position of the cloth market is improving through the gradual acceptance by the buyer that there is danger in overstaying his supplies market; that reserve stocks of

reasonable size might serve as a measure of safety under conditions carrying a constant threat of market advance. Heavy receipts of cotton from the new crop served to hold the raw material prices in check for the time being through the continued sales of hedges against actual cotton, but by elimination of this feature, a few weeks hence, cloth prices will probably rise gradually.

RAINCOAT FABRICS. There is pronounced activity in the fall raincoat trade. The leading materials are suede finished goods in various colors. Smooth leather-like effects in latex impregnated fabrics are also popular.

SHEETING. August sales were the greatest on record, and the net unfilled order position very large. In the face of the decline in raw cotton, however, prices have reacted downward and are now considerably below early September quotations.

TIRE FABRICS. Fabric buying was light in September with prices nominally unchanged.

Crude Rubber

(Continued from page 68)

stocks totaled 22,356 tons, compared with 21,008 at the end of July.

Traders generally declared that the disappointingly large rate of output was due to the rise in price of crude rubber. Producers had evidently stepped up production to take advantage of the higher price, and that move is one reason why traders are hoping that the price will not rise too fast thus bringing more rubber into the market.

The Rubber Manufacturers Association released the July figures on pneumatic casings, which serve to emphasize what an abnormal influence was exerted on the market in June when buyers rushed to stock up before the imposition of the excise tax. July shipments were 2,404,095 casings, compared with 10,366,640 in June and 5,461,908 in July, 1931. Even the comparison with last year is not so favorable, except for the fact that stocks on hand are lower although they increased over the June level. Production in July was 3,616,829 casings against 5,643,329 in June and 4,926,484 in July, 1931. Dealers had 6,202,856 casings on hand July 31 against 4,625,021 at the end of June and 9,919,456 at the end of July last year.

Outside Market prices gained over those the week before in a market which disclosed little buying power. Nearbys sold at 3-15/16¢ against 3-1/16¢ last week; January-March 4-3/16 against 3-13/16; and April-June 4 1/4 against 3-15/16.

Higher Ford output raised the *Times* automobile index from 25.6 at the end of the September 10 week to 28.0 at the end of the September 17 week; last year the index was 45.2.

On September 27 No. 1 standard contracts were nominally quoted as follows: September 3.65; October 3.68; November 3.72. Actual rubber was without factory interest. Standard ribs were offered at 3-13/16, and latex nominally quoted around 4 1/4¢.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Sept. 3	8.71
Sept. 10	8.42
Sept. 17	7.25
Sept. 24	7.28

New York Quotations

September 26, 1932

Drills	Cents
38-inch 2.00-yd.	\$0.083 1/2
40-inch 3.47-yd. . . . .	.05 1/2
50-inch 1.52-yd. . . . .	.13
52-inch 1.90-yd. . . . .	.09 1/2
52-inch 2.20-yd. . . . .	.08 1/2
52-inch 1.85-yd. . . . .	.10

Ducks	Cents
38-inch 2.00-yd. D. F. . . . .	.09 1/4
40-inch 1.45-yd. S. F. . . . .	.12 3/4
72-inch 1.05-yd. D. F. . . . .	.19
72-inch 16.66-oz. . . . .	.21 1/2
72-inch 17.21-oz. . . . .	.22 1/2

MECHANICAL	Cents
Hose and belting . . . . .	.20

TENNIS	Cents
52-inch 1.35-yd. . . . .	.13 1/2

Hollands	Cents
RED SEAL	
36-in. . . . .	.11
40-in. . . . .	.11 1/2
50-in. . . . .	.17 1/2

GOLD SEAL	Cents
40-in., No. 72 . . . . .	.14

Tire Fabrics	Cents
BUILDER	
17 1/4 oz. 60" 23/11 ply Karded peeler . . . . .	.21 1/2
17 1/4 oz. 60" 10/5 ply Karded peeler . . . . .	.18 1/2

CHAFER	Cents
14 oz. 60" 20/8 ply Karded peeler . . . . .	.21 1/2
12 oz. 60" 10/4 ply Karded peeler . . . . .	.17 1/2
9 1/4 oz. 60" 20/4 ply Karded peeler . . . . .	.23 1/2
9 1/4 oz. 60" 10/2 ply Karded peeler . . . . .	.18 1/2

CORD FABRICS	Cents
23/5/3 Karded peeler, 1 1/8" cotton lb. . . . .	.22 1/2
23/4/3 Karded peeler, 1 1/8" cotton lb. . . . .	.23 1/2
15/3/3 Karded peeler, 1 1/8" cotton lb. . . . .	.20 1/4
13/3/3 Karded peeler, 1 1/8" cotton lb. . . . .	.19 1/4
7/2/2 Karded peeler, 1 1/8" cotton lb. . . . .	.18 1/4
23/5/3 Karded peeler, 1 1/4" cotton lb. . . . .	.28 1/4
23/5/3 Karded Egyptian lb. . . . .	.34
23/5/3 Combed Egyptian lb. . . . .	.39

LENO BREAKER	Cents
8 1/4 oz. and 10 1/4 oz. 60" Karded peeler . . . . .	.21 1/2

Osnaburgs	Cents
40-in. 2.34-yd. . . . .	.07 1/2
40-in. 2.48-yd. . . . .	.07 1/4
40-in. 3.00-yd. . . . .	.06
40-in. 10-oz. part waste . . . . .	.09
40-in. 7-oz. . . . .	.06 3/4
37-in. 2.42-yd. . . . .	.07 3/4

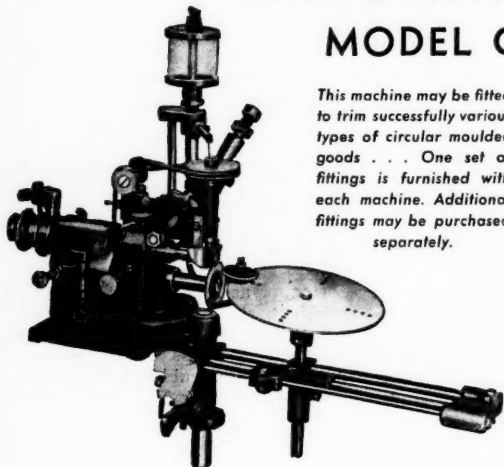
Raincoat Fabrics

COTTON	Cents
Bombazine 64 x 60 . . . . .	.07 3/4
Bombazine 60 x 48 . . . . .	.07 1/4
Plaids 60 x 48 . . . . .	.08 3/4
Plaids 48 x 48 . . . . .	.07 3/4
Surface prints 60 x 60 . . . . .	.09 1/4
Surface prints 60 x 48 . . . . .	.09
Print cloth, 38 1/4-in., 64 x 60 . . . . .	.03 1/4
Print cloth, 38 1/4-in., 60 x 48 . . . . .	.02 3/4

SHEETINGS, 40-INCH	Cents
48 x 48, 2.50-yd. . . . .	.06 1/2
48 x 48, 2.85-yd. . . . .	.05 1/4
64 x 68, 3.15-yd. . . . .	.05 1/2
56 x 60, 3.60-yd. . . . .	.05 1/2
44 x 48, 3.75-yd. . . . .	.04 3/4
44 x 40, 4.25-yd. . . . .	.04 1/4

SHEETINGS, 36-INCH	Cents
48 x 48, 5.00-yd.03 3/4
44 x 40, 6.15-yd.03 1/2

USMC TRIMMING MACHINE MODEL C

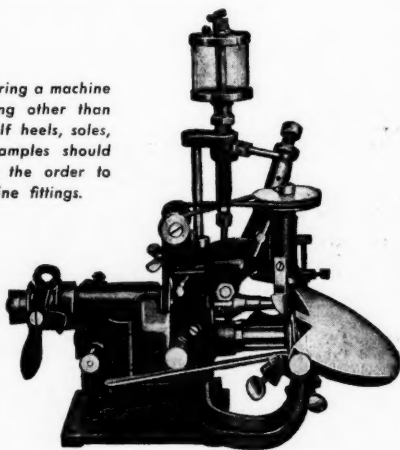


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Oil is the standard means of lubrication. A water tank is shipped, only when specifically ordered, at an extra charge.

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Haverhill, Mass.....145 Essex	Philadelphia, Pa. 221 No. 13th
Johnson City, N. Y. 276 Main	Rochester, N. Y. 130 Mill
Lynn, Mass.....306 Broad	St. Louis, Mo.1423 Olive
San Francisco, Calif.859 Mission	

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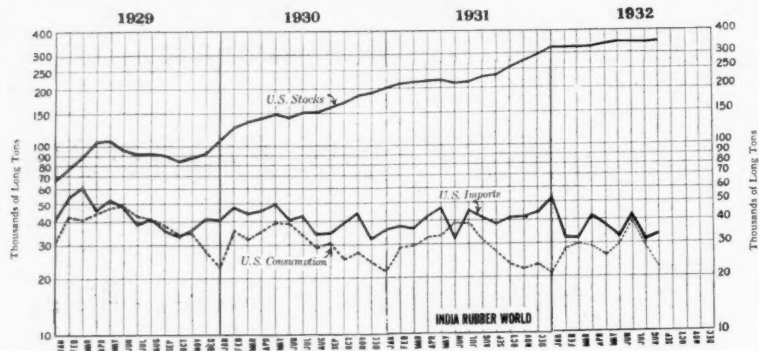
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IMPORTS, CONSUMPTION, AND STOCKS



United States Stocks, Imports, and Consumption

CONSUMPTION of crude rubber by manufacturers in the United States for August amounted to 22,372 long tons as compared with 28,272 long tons for July, 1932, a decrease of 20.9% according to The Rubber Manufacturers Association.

August imports of crude rubber were 34,219 long tons, an increase of 10.1% above July, 1932, and 10.8% below August, 1931.

Total domestic stocks of crude rubber on hand August 31 are estimated at 357,342 long tons, compared with July 31 stocks of 345,927 long tons, an increase of 3.3% as

compared with July, 1932, and 48.4% above the stocks of August 31, 1931.

There were 42,846 long tons of crude rubber afloat for the United States ports on August 31. This compares with 37,894 long tons afloat on July 31, 1932, and 38,370 long tons afloat on August 31, 1931.

London and Liverpool Stocks

Week Ended	Tons	
	London	Liverpool
Sept. 3	46,982	58,080
Sept. 10	46,325	57,965
Sept. 17	46,176	58,028
Sept. 24	44,986	58,004

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Consumption Tons	U. S. Stocks on Hand† Tons	U. S. Stocks Afloat† Tons	United Kingdom Stocks† Tons	Singapore and Penang, Etc.† Tons	World Production (Net Exports)† Tons	World Consumption Estimated† Tons	World Stocks†† Tons
1927	431,807	372,528	100,130	47,938	65,663	25,798	605,196	589,128	193,146
1928	446,421	442,227	66,166	68,764	22,691	32,905	649,674	667,027	122,828
1929	561,454	466,475	105,138	62,389	73,276	36,768	863,410	785,475	228,572
1930	488,343	375,980	200,998	56,035	118,297	45,179	821,815	684,993	366,034
1931	495,163	348,986	322,826	53,940	127,103	55,458	797,441	668,660	495,724
1932									
January	31,298	27,962	322,860	42,234	125,276	59,836	63,627	50,480	507,962
February	30,546	30,012	322,117	51,728	125,958	56,684	59,871	51,230	504,759
March	42,382	27,828	334,566	44,190	124,975	51,072	58,977	63,324	510,838
April	37,017	25,953	343,098	40,387	123,235	48,303	57,232	57,450	514,637
May	32,224	29,197	346,231	50,453	146,015	47,015	62,434	56,156	509,261
June	41,394	39,116	345,702	43,079	109,509	28,671	57,713	72,300	483,882
July	31,078	28,272	345,927	37,894	106,085	24,206	60,812	56,720	474,218
August	34,219	22,372	357,342	42,846					

*Including liquid latex, but not guayule. †Stocks on hand the last of the month or year. ‡W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Hard Rubber Co.	8% Pfd.	\$2.00 q.	Oct. 1	Sept. 15
Dominion Rubber Co., Ltd.	Pfd.	\$1.75 q.	Sept. 30	Sept. 23
Firestone Tire & Rubber Co.	Com.	\$0.25 q.	Oct. 20	Oct. 5
Garlock Packing Co.	Com.	\$0.10 q.	Oct. 1	Sept. 24
Goodyear Tire & Rubber Co. of Canada, Ltd.	Pfd.	\$1.75 q.	Oct. 1	Sept. 15
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	\$1.25 q.	Oct. 1	Sept. 15
Stedman Rubber Flooring Co.	Pfd.	\$1.75 q.	Oct. 1	Sept. 26
Tyer Rubber Co.	6% Pfd.	\$1.50 q.	Aug. 15	Aug. 10
Worthington Ball Co.	A Pfd.	\$0.50 q.	Oct. 15	Sept. 30

New Incorporations

Philadelphia Rubber Waste Co., Aug. 25 (Del.), capital 250 shares, no par. J. M. and J. A. Frere, and C. R. Murphy, all of Wilmington, Del. To acquire rubber, cotton, and other kinds of waste, to convert and manufacture into new and marketable products, and to sell and otherwise deal in scrap.

The Saffer Co., Inc., of Westfield, Mass., 1,000 shares common, no par value. President, A. H. Saunders; treasurer, H. Saffer, 92 Franklin St., Westfield; and W. H. Marland. To deal in scrap rubber.

Soapak Sponge Corp., Aug. 2 (N. Y.), capital 200 shares common stock.

The Warshauer & Franck Co., of Boston, Mass. Capital \$50,000. Vice president, J. J. Franck; treasurer, J. Warshauer; and G. J. Dodd. 81 Fayston St., Roxbury, Mass. Carry on business in wool, cotton, rubber, and leather.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	INQUIRY
1514	Manufacturer of toy balloon bearing the word: "Tiger" and a representation of the animal.
1515	Supplier of soapbark chips.
1516	Supplier of balata golf ball shells.
1517	Manufacturer of Norris whitening.
1518	Manufacturer of skived boots or blowout patches.
1519	Manufacturer of automobile running board matting.
1520	Manufacturer of rubber medicine droppers.
1521	Manufacturer of machinery for making rubber printing plates.
1522	Supplier of materials for making rubber printing plates.
1523	Manufacturer of Dixep.

World Rubber Absorption—Net Imports

CONSUMPTION	Long Tons—1932		
	May	June	July
United States	29,292	39,244	28,364
United Kingdom	6,107	8,362	7,507
NET IMPORTS			
Australia	2,048	1,421	624
Austria	154	180	.....
Belgium	617	449	.....
Canada	1,416	2,834	1,529
Czechoslovakia	350	280	.....
Denmark	64	74	51
Finland	154	51	62
France	2,277	3,666	3,125
Germany	3,447	3,405	3,380
Italy	1,033	1,534	1,116
Japan	3,917	2,834	.....
Netherlands	286	127	214
Norway	98	93	148
Russia	3,743	5,291	.....
Spain	272	196	258
Sweden	391	360	523
Switzerland	26	45	27
Others	*800	*800	*800
Totals	56,492	71,246	.....
Minus United States (Cons.)	29,292	39,244	28,364
Total foreign	27,200	32,002	.....

*Estimate to complete table. Compiled by Rubber Division, Department of Commerce, Washington, D. C.

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SITUATIONS WANTED

CHEMIST, AGE FORTY-TWO, SINGLE, 14 YEARS' EXPERIENCE laboratory and factory work on tires, insulation, and reclaiming. Wide variety of non-rubber chemical experience. Address Box No. 100, care of INDIA RUBBER WORLD.

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76 Maryon Road
London, S. E. 7, England

Imports by Customs Districts

	July, 1932		July, 1931	
	Rubber Latex Pounds	Value	Crude Rubber Pounds	Value
Vermont			501	\$40
Massachusetts	310,911	\$23,535	3,905,758	130,171
New York	149,720	11,035	55,515,618	1,624,062
Philadelphia			703,360	16,894
Maryland			4,322,986	127,510
Georgia			1,250,374	37,351
Mobile				431,292
Los Angeles			6,355,163	155,007
San Francisco			300,320	11,310
Indiana				570
Oregon			11,200	
Ohio	27,852	2,757		
Totals	488,483	\$37,327	72,365,280	\$2,102,915

*Crude rubber including latex dry rubber content.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for August, 1932:

Rubber Exports

Ocean Shipments from Singapore, Penang, Malacca, and Port Swettenham

	August, 1932	
	Sheet and Crepe Rubber Tons	Latex Concentrated Latex and Revertex Tons
To		
United Kingdom	6,455	84
United States	21,362	251
Continent of Europe	6,054	172
British possessions	636	13
Japan	4,096	14
Other countries	160	..
Totals	38,863	534

U. S. Crude and Waste Rubber Imports for 1932

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals		Ba-lata	Miscellaneous	Waste
								1932	1931			
Jan. tons	30,847	271	142	38	..	..	..	31,298	37,098	53	731	50
Feb. tons	30,041	361	144	..	..	..	..	30,546	36,645	98	689	..
Mar. tons	41,753	335	240	54	..	..	..	42,382	40,338	65	754	25
Apr. tons	36,390	516	111	..	..	..	..	37,017	46,648	35	421	..
May tons	32,030	82	81	31	..	..	..	32,224	31,720	72	645	30
June tons	41,070	290	34	..	..	..	..	41,394	45,776	17	415	..
July tons	30,822	212	44	..	..	..	..	31,078	41,004	57	505	..
Aug. tons	33,939	260	20	..	..	..	..	34,219	38,370	25	437	9
Total, 8 mos., 1932	276,892	2,327	816	123	..	..	..	280,158	..	422	4,597	114
Total, 8 mos., 1931	311,084	2,713	3,680	121	1	..	..	317,599	994	5,484	125	..

Compiled from The Rubber Manufacturers Association, Inc., statistics.

Rubber Imports

Actual Imports by Land and Sea

	August, 1932	
	Dry Rubber Tons	Wet Rubber Tons
From		
Sumatra	454	3,039
Dutch Borneo	539	1,962
Java and other Dutch Islands	40	15
Sarawak	495	11
British Borneo	227	26
Burma	94	3
Siam	174	126
French Indo-China	133	16
Other countries	32	5
Totals	2,168	5,203

Plantation Rubber Crop Returns by Months

Summary of 615 Producing Companies

	Br. N. Borneo (26 Companies)		Ceylon (102 Companies)		India and Burma (21 Companies)		Malaya (338 Companies)		Netherlands East Indies Java (60 Companies)		Sumatra (60 Companies)		Miscellaneous (8 Companies)		Total (615 Companies)	
	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index
1932																
January	352	72.0	1,378	67.5	208	37.0	14,409	115.9	2,791	106.3	4,712	116.9	212	117.1	24,062	107.6
February	336	68.7	738	36.2	82	14.6	11,854	95.3	2,793	106.4	3,894	96.6	120	66.5	19,817	88.6
March	365	74.6	1,187	58.2	152	27.0	11,355	91.3	3,071	116.9	4,210	104.4	143	79.0	20,483	91.6
April	318	65.0	1,209	59.2	149	26.5	11,991	96.4	2,760	105.1	4,046	100.3	163	90.1	20,636	92.3
May	299	61.1	898	44.0	99	17.6	12,727	102.4	2,544	96.9	4,375	108.5	171	94.5	21,113	94.4
June	319	65.2	1,168	57.2	56	10.0	12,331	99.2	2,330	88.7	4,303	106.7	157	86.7	20,664	92.4
July	317	64.8	1,220	59.8	23	4.1	13,112	105.5	2,222	84.6	4,199	104.1	123	68.0	21,216	94.9
Seven months ending July, 1932	2,306	..	7,798	..	769	..	87,779	..	18,511	..	29,738	..	1,089	..	147,991	..
1931	2,809	..	9,140	..	2,846	..	83,100	..	21,214	..	28,718	..	1,373	..	149,200	..

NOTE. Index figures throughout are based on the monthly average for 1929=100. Issued August 25, 1932, by the Commercial Research Department, The Rubber Growers' Association, Inc., London, England.

World Rubber Shipments—Net Exports

	Long Tons—1932					
	Mar.	Apr.	May	June	July	Aug.
British Malaya Gross exports	39,903	36,670	40,297	36,566	40,723	39,337
Imports	6,658	4,682	5,677	5,665	5,346	7,371
Net	33,245	31,988	34,620	30,901	35,377	31,966
Ceylon	3,462	3,210	3,824	3,444	3,501	*5,585
India and Burma	284	365	304	359	99	..
Sarawak	501	459	595	481	442	506
British No. Borneo	460	420	420	420	*420	..
Siam	217	130	118	166	184	300
Java and Madura	4,946	6,722	6,552	5,610	5,779	..
Sumatra E. Coast	6,863	6,090	6,551	7,516	6,257	..
Other N. E. Indies	6,299	4,935	6,012	5,507	6,145	..
French Indo-China	774	962	964	1,218	*974	*1,164
Amazon Valley	715	487	416	394	232	..
Other America .....	..	10	..	..	..	..
Guayule .....	..	..	..	..	..	..
Africa	77	89	278	125	141	..
Totals	57,843	55,867	60,654	56,155	59,551	..

*Estimate.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Sumatra Rubber Plantation Industry

The Trading Association of Medan publishes the following interesting figures in regard to the rubber plantation industry on the east coast of Sumatra for 1931:

	Area (Hectares)	Productive Area (Hectares)	Production (Metric Tons)	Productivity (Kilos per Hectare)
Dutch	100,882	55,881	26,384	472
British	74,979	53,596	18,077	338
American	49,134	30,536	20,155	660
Belgian	33,339	19,049	7,555	396
Other	17,402	13,181	5,824	450
Totals	275,736	172,243	77,995	453

General productivity of the rubber plantations has increased considerably since 1930 and the figure of the American plantations in particular is imposing. On the other hand, the British figure is comparatively small and shows no improvement in 1931. This is due to the fact that the old plantations on the east coast of Sumatra are largely British owned. (Financial Times, London, England, August 8, 1932.)

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Rubber Questionnaire

Second Quarter, 1932*

	Long Tons			
	Inventory at End of Quarter	Production	Shipments	Con- sumption
RECLAIMED RUBBER				
Reclaimers solely (5).....	4,058	6,108	7,188	
Manufacturers who also reclaim (22)...	5,910	9,658	4,537	9,203
Other manufacturers (61).....	2,538	....	....	7,634
Totals	12,506	15,766	11,725	16,837
	Long Tons			
	In- ventory	Con- sumption	Due on Contract	
SCRAP RUBBER				
Reclaimers solely (5).....	19,518	7,480	4,219	
Manufacturers who also reclaim (16).....	32,481	11,565	3,048	
Other manufacturers (11).....	230	....	....
Totals	52,229	19,045	7,267	

Tons of Rubber Consumed in Rubber Products and Total Sales Value of Shipments

PRODUCTS	Crude Rubber Consumed	Total Sales Value of Shipments of Manufactured Rubber Products
	Long Tons	
Tires and Tire Sundries		
Automobile and motor truck pneumatic casings..	60,597	\$109,787,000
Automobile and motor truck pneumatic tubes...	10,285	13,162,000
Motorcycle tires (casings and tubes).....	76	176,000
Bicycle tires (single tubes, casings, and tubes)...	272	515,000
Airplane casings and tubes.....	14	70,000
Solid and cushion tires.....	574	1,404,000
All other solid tires.....	53	155,000
Tire sundries and repair materials.....	861	2,455,000
Totals	72,732	\$127,724,000
Other Rubber Products		
Mechanical rubber goods.....	3,815	\$13,157,000
Boots and shoes.....	2,538	8,255,000
Insulated wire and insulating compounds.....	533	\$1,614,000
Druggists' sundries, medical and surgical rubber goods	449	1,187,000
Stationers' rubber goods.....	383	332,000
Bathing apparel.....	273	1,063,000
Rubber clothing.....	161	374,000
Automobile fabrics.....	61	301,000
Other rubberized fabrics.....	407	1,116,000
Hard rubber goods.....	287	602,000
Heels and soles.....	1,854	2,892,000
Rubber flooring.....	258	499,000
Sporting goods, toys, and novelties.....	441	3,177,000
Miscellaneous, not included in any of the above items.....	1,040	2,423,000
Totals	12,500	\$36,992,000
Grand totals—all products.....	85,232	\$164,716,000

Inventory of Rubber in the United States and Afloat

	Long Tons			
	Plantation	Para	All Others	Totals
ON HAND				
Manufacturers.....	230,077	2,029	174	232,280
Importers and dealers.....	49,794	567	195	50,556
Totals on hand.....	279,871	2,596	369	282,836
AFLOAT				
Manufacturers.....	12,684	.....	.....	12,684
Importers and dealers.....	30,751	25	.....	30,776
Totals afloat.....	43,435	25	.....	43,460

*Number of rubber manufacturers that reported data was 156; crude rubber importers and dealers, 40; reclaimers (solely), 5; total daily average number of employees on basis of third week of April, 1932, was 111,712.

It is estimated that the reported grand total crude rubber consumption and the grand total sales value figures to be approximately 92 per cent; the grand total crude rubber inventory 89 per cent; afloat figures unavailable; the reclaimed rubber production 96 per cent; reclaimed consumption 86 per cent; and reclaimed inventory 73 per cent of the total of the entire industry.

†One company did not report its sales, but did report crude rubber consumption, stocks, etc.

Compiled from statistics supplied by The Rubber Manufacturers Association, Inc.

United States Statistics

Imports of Crude and Manufactured Rubber

	June, 1932		Six Months Ended June, 1932	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—Free				
Crude rubber.....	91,410,369	\$2,647,085	491,167,175	\$18,956,898
Liquid latex.....	691,155	28,800	4,840,983	240,026
Jelutong or pontianak.....	738,595	47,077	6,416,187	384,879
Balata.....	84,936	9,483	884,890	89,680
Gutta percha.....	24,880	2,153	249,011	17,891
Siak, scrap, and reclaimed..	452,193	11,000	2,734,552	34,219
Totals	93,402,128	\$2,745,598	506,292,798	\$19,723,593
Chicle, crude.....	224,270	\$59,527	3,583,783	\$1,520,843
MANUFACTURED—Dutiable				
Tires.....	number	\$5,961	14,957	\$90,712
Other rubber manufactures..	.....	27,141	.....	285,647
Totals .....	.....	\$33,691	.....	\$376,359

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES			
	Pounds	Value	
Crude rubber.....	4,429,258	\$134,376	\$1,131,154
Balata.....	4,760	1,230	25,552
Guayule.....	.....	2,300	281
Gutta percha, rubber substitutes, and scrap.....	.....	16,171	1,975
Rubber manufactures.....	.....	165	4,267
Totals .....	.....	\$135,771	\$1,163,229

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES			
	Pounds	Value	
Reclaimed.....	578,172	\$21,511	\$210,662
Scrap and old.....	3,376,435	53,262	28,553,390
Rubberized automobile cloth, sq. yd.....	39,629	14,546	253,874
Other rubberized piece goods and hospital sheeting, sq. yd.....	33,165	11,568	339,761
Footwear			
Boots.....	2,821	7,264	62,281
Shoes.....	4,693	2,636	97,233
Canvas shoes with rubber soles.....	14,148	8,299	158,321
Soles.....	1,215	3,295	12,911
Heels.....	22,167	14,096	186,695
Water bottles and fountain syringes.....	5,086	2,406	81,888
Gloves.....	4,714	10,331	28,351
Other druggists' sundries.....	.....	22,070	146,448
Balloons.....	18,368	11,767	157,170
Toys and balls.....	.....	4,144	18,888
Bathing caps.....	.....	4,322	31,051
Bands.....	19,630	5,706	165,035
Erasers.....	22,202	13,457	137,616
Hard rubber goods			
Electrical goods.....	38,438	4,806	434,149
Other goods.....	.....	6,650	53,059
Tires			
Truck and bus casings, number.....	16,988	280,559	108,357
Other automobile casings, number.....	62,945	385,988	388,428
Tubes, auto.....	56,175	55,696	322,290
Other casings and tubes, number.....	3,810	9,212	18,545
Solid tires for automobiles and motor trucks, number.....	452	12,167	4,357
Other solid tires.....	106,161	13,508	785,549
Tire sundries and repair materials			
Rubber and friction tape....	39,923	9,305	357,585
Belting.....	101,830	42,583	808,674
Hose.....	204,520	57,314	1,384,285
Packing.....	69,918	24,118	500,852
Thread.....	83,181	49,494	604,790
Other rubber manufactures..	.....	91,085	508,317
Totals .....	.....	\$1,296,693	\$9,047,420

London Stocks, July, 1932

	Stocks, July 31		
	Landed Tons	De-livered Tons	
LONDON			
Plantation.....	3,389	5,556	48,798
Other grades.....	.....	.....	44
LIVERPOOL			
Plantation.....	*1,323	*2,580	*57,243
Totals, London and Liverpool.....	4,712	8,136	106,085

	Stocks, July 31		
	1932 Tons	1931 Tons	1930 Tons
Plantation.....	48,798	81,241	80,144
Other grades.....	44	44	54
Plantation.....	*57,243	*54,833	*27,332
Totals, London and Liverpool.....	106,085	136,118	107,530

*Figured to September 26, 1932. †Nominal. ‡No stocks.

*Official returns from the recognized public warehouses.

Low and High New York Spot Prices in Cents Per Pound

	September		
	*1932	1931	1930
PLANTATIONS			
Thin latex crepe.....	4 1/5¢	4 1/2¢/5 1/4¢	7 1/4¢/10 1/2¢
Smoked sheet, ribbed.....	3 1/2¢/4 1/2¢	4 1/2¢/5 1/4¢	7 1/2¢/9 3/4¢
PARAS			
Upriver fine.....	5 1/2¢/7 1/4¢	6 7/8¢	12 1/4¢/13 1/4¢
Upper caucho ball.....	†23	†	†

